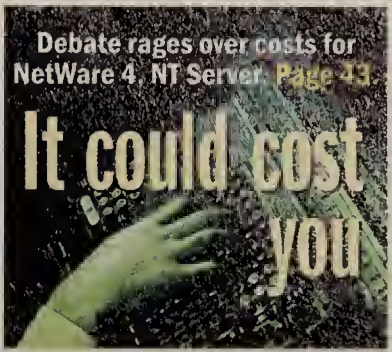
JULY 29, 1996 VOLUME 13, NUMBER 31

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



Debate rages over costs for NetWare 4, NT Server. Page 43

It could cost you

Market forces may crush Web group

Second in a two-part series examining the W3C.

PART TWO

By Ellen Messmer and Carol Sliwa

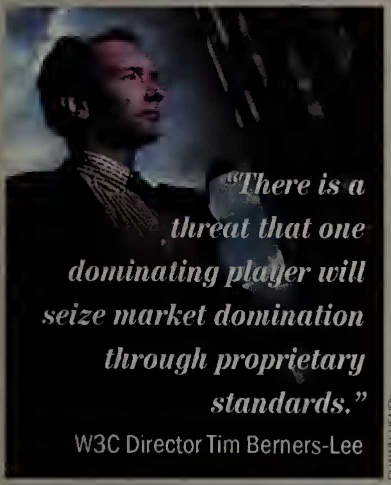
Cambridge, Mass.

For two years, the World Wide Web Consortium (W3C) has rallied the network industry, quarrelsome and combative as it is, around the greater cause of an interoperable Web.

But even as the triumphs of the W3C mount, and its membership soars to more than 140 dues-paying companies worldwide, the organization faces what may be an inevitable balkanization of the Web and the sunset of its own influence.

Two key W3C members, archrivals Microsoft Corp. and Netscape Communications Corp., seem intent on pushing past the consortium to establish control over the Internet/intranet market. In

See **W3C,** *page 12*



"There is a threat that one dominating player will seize market domination through proprietary standards."

W3C Director Tim Berners-Lee

SHAWN HENRY

AT&T, MCI ratchet up rates

Businesses' service prices raised an average of 4% on eve of the FCC's ruling regarding local-loop competition.

By David Rohde

Washington, D.C.

AT&T and MCI seem to agree on at least one thing — that long-distance phone service is just too darn cheap. So once again, the two largest U.S.-based long-distance carriers have decided their business customers should pay more, and have hiked their prices for many key network services by roughly 4%.

Although this has happened before, this time around the moves drew cries of exasperation from users and charges of hypocrisy from local carriers.

That is because AT&T and MCI Communications Corp. this

See **Rate hike,** *page 61*

UP, UP AND AWAY

AT&T and MCI have raised prices on the following key business services:

AT&T

Software Defined Network
Software Data Defined Network
Switched Digital Service
Megacom 800
800 Gold Service
800 Readyline
Uniplan
Distributed Network Service

MCI

Vnet
MCI 800
Vision*

* Some rates on Vision were lowered.

WHAT A 4% INCREASE MEANS TO YOU

If your annual telecommunications expenditure for public network switched services is...

$1 million, the carriers' move could cost you $40,000.

If it's $10 million, the carriers' move could cost you $400,000.

Actual increase depends on which services each user subscribes to.

SOURCE: FCC, WASHINGTON, O.C.

Bay seeks CEO, must have nerves of steel

By Jim Duffy

Santa Clara, Calif.

He lacks the bravado of Cabletron's Benson and Levine, the unshakable confidence of Cisco's Chambers and the quiet intensity of 3Com's Benhamou.

But none of this will matter much longer because Andy Ludwick has decided to resign as president and chief executive officer of Bay Networks, Inc. Bay last week confirmed that the unassuming Harvard MBA — who cofounded SynOptics Communications Corp. in 1985 and successfully merged the $700 million behemoth with Wellfleet Communications, Inc. in 1994 — will step down once a replacement is found.

Whoever succeeds Ludwick is going to have a full plate. One of Bay's biggest challenges will be to better manage the transition to switched LANs from shared-media LAN products, which analysts said make up nearly 50% of Bay's revenue. Bay also has to focus more on selling products in large volumes to stave off market share incursions from rivals Cabletron Systems, Inc., Cisco Systems, Inc. and 3Com Corp.

Ludwick *oversaw the monster merger of SynOptics and Wellfleet.*

"[Networking] is becoming a very high-volume business with fierce competition around price, where relationships and distribution are the name of the game," said Nick Lippis, president of Strategic Networks Consulting, Inc. in Rockland, Mass. Ludwick's

See **Bay,** *page 13*

Microsoft and Netscape take battle to distributed object front

By Carol Sliwa

Those warring Internet rivals are at it again, this time taking the battle to the distributed object front.

Today, Netscape Communications Corp. will unveil its strategy for creating distributed client/server applications for the intranet marketplace — a mission the company plans to achieve through the Object Management Group's Com-

See **Netscape,** *page 61*

Read more on Network World Fusion about Microsoft's and Netscape's plans, including:

- ▶ Netscape products for the intranet marketplace
- ▶ Microsoft Access Internet strategy
- ▶ Analysis of how the brawl between the two companies is shaping up

Select News+.

NetworkWorld Fusion

http://www.nwfusion.com

Special report

Can HP push Compaq off top of server heap?

By Ben Heskett

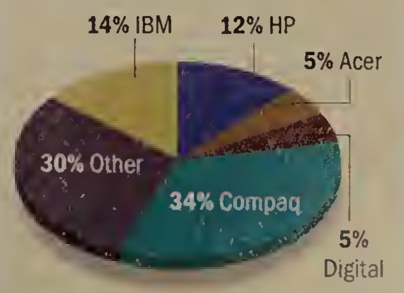
In the hot race for server market dominance, Compaq Computer Corp. has lots of competitors in its rearview mirror, but one set of headlights keeps getting brighter all the time: those of Hewlett-Packard Co.

Compaq, IBM and HP are the top three players in the fast-growing Intel Corp. server market, which International Data Corp. (IDC) predicts will grow to almost $18 billion by 1998. IBM remains a tough contender, but its share of the Intel server market slipped by 50% since 1993, putting the company in a neck-and-neck race with HP, which is pumping up its efforts in the Intel server arena.

Compaq attacked the server market early and built up big market share — 34% in 1995, according to IDC, a Framingham, Mass.-based market research firm. But as servers become a more important — and lucrative — applications

See **HP,** *page 14*

PC SERVERS AND SUPERSERVERS



1995 worldwide market figures, based on a total of 850,000 servers shipped

SOURCE: IDC, FRAMINGHAM, MASS.

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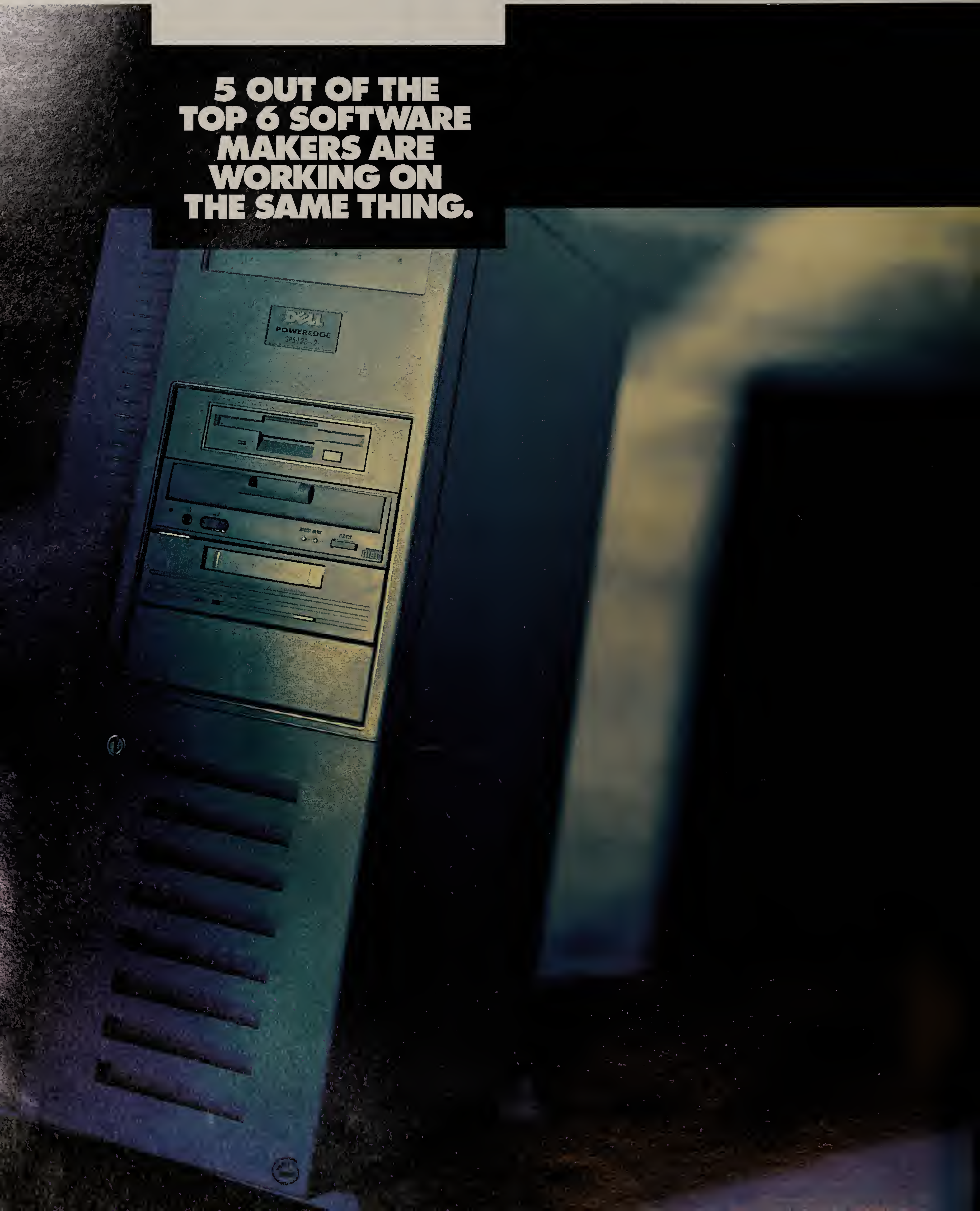
Access Network World Fusion using the number in yellow. See page 5 for details.


5 OUT OF THE TOP 6 SOFTWARE MAKERS ARE WORKING ON THE SAME THING.
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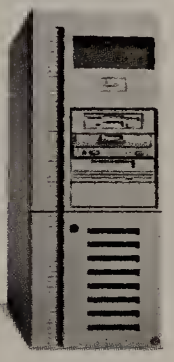
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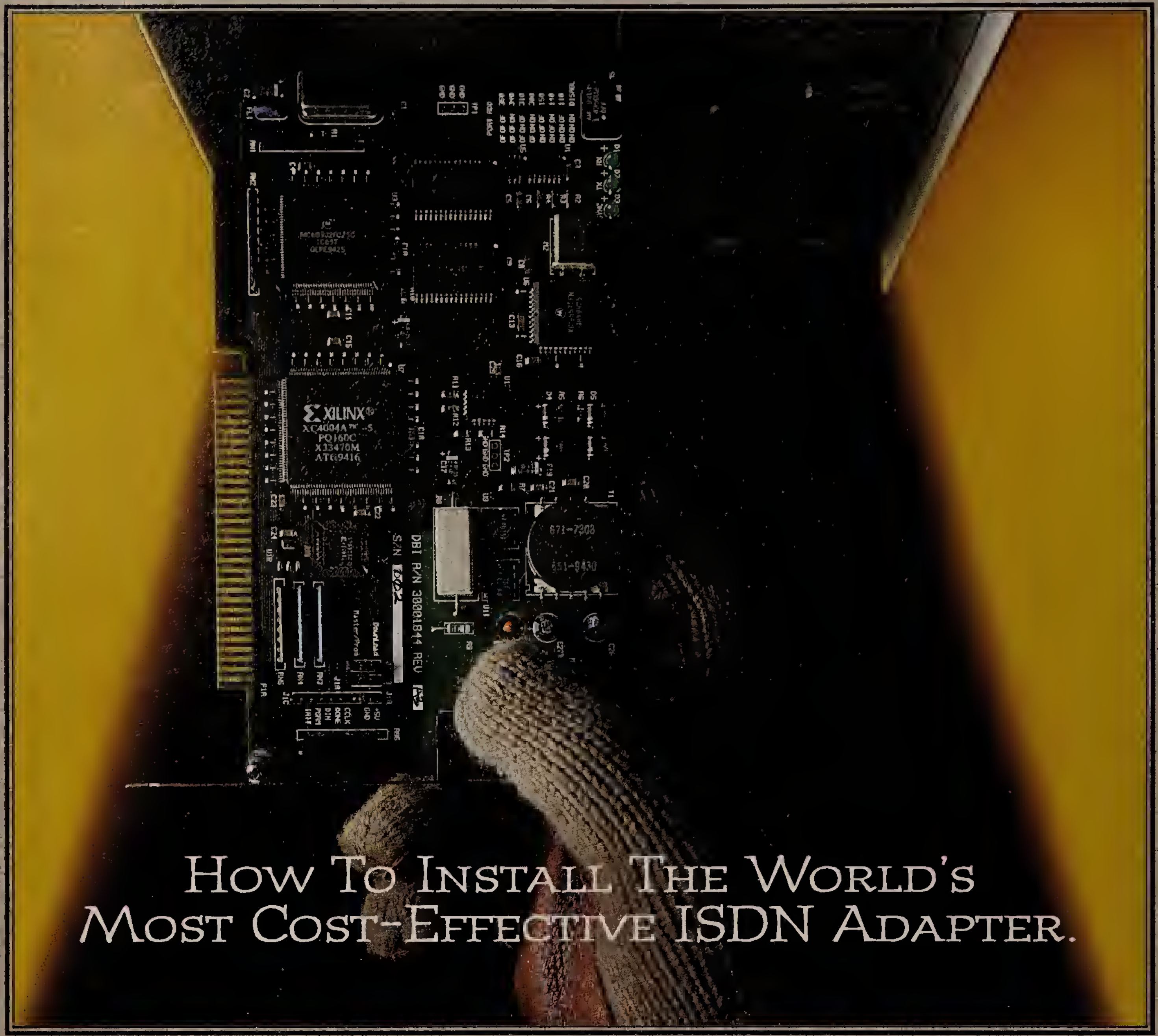

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This Week

News+

We've reorganized the News+ section to make it easier to use. Now, no story is more than a key-click away from the News+ page.

- **Price hikes:** AT&T and MCI raise long-distance phone rates for business customers, drawing charges of hypocrisy from local carriers. Check out the latest on the phone wars.
- **W3C:** Find out why the battle between Microsoft and Netscape to set technical standards for the Web may threaten the viability of the World Wide Web Consortium.
- **Departing:** Read how the imminent retirement of Bay President and CEO Andy Ludwick might affect the California-based networking giant.
- **Server market:** Hewlett-Packard is moving fast to challenge Compaq for dominance in the hotly contested server market. Learn how HP has gained ground.
- **Internet strategy:** Microsoft and Netscape announce their latest moves to control the Internet and intranet markets. See what the two arch-competitors are up to.
- **Groupware:** Novell begins shipping what might be the final beta version of GroupWise 5, the company's well-received groupware product. Browse Novell documents about this software.

NetRef

Download complete test results for three new token-ring switches (page 49). Select Product Reviews/Buyer's Guides, then Token-Ring Switches.

this week's pick

SCESCAPE is a Web site (http://www.scescape.com) in South Carolina that contains a wealth of information about the state, as well as an impressive World Library of Web resources that includes links to computer-related businesses and sites. Make sure to check out their link to Anti-virus Resources at http://www.hitchhikers.net/av.htm.

HOW TO GET ON TO NETWORK WORLD FUSION

At the welcome screen, click on Registration and follow the instructions. Subscribers, keep your NWF number — highlighted on the front cover's mailing label — handy during registration. Non-subscribers must fill out an online registration form.

NetworkWorld Fusion

CONFERENCE PICK

Hot Topic **Read Mark Gibbs on how Microsoft barely avoided shooting itself in the foot, then add your comments.**

Select Forum, Columnists then Backspin.

NetworkWorld
An IDG Publication

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NetworkWorld's *Mission: To provide news and analysis that help network IS professionals deliver the network computing infrastructure and distributed applications required to meet evolving business needs.*

News briefs, July 29, 1996

NT Workstation limitation removed

■ Microsoft Corp. last week said it has decided to remove a technical limitation in the Windows NT Workstation 4.0 beta that would have made it impractical to use the operating system as a Web server platform (*NW*, July 22, page 6). The company had considered restricting inbound TCP/IP connections to 10 unique IP addresses in a 10-minute period. Microsoft said it still believes Windows NT Server is better suited for most Web servers. (For Mark Gibbs' take on this, see Backspin column, page 62.)

At Timeplex, they are a-changin'

■ Top management at Ascom Timeplex, Inc. continued to appear shaky last week when the company announced its third chief executive officer in five years. Randy Phillips stepped down after less than two years at the top post and was replaced by Ascom Timeplex insider Peter Taylor. Taylor joined Ascom Timeplex in 1983, where his most recent position was manager for the Ascom Timeplex U.K. companies.

IBM stumbles at the Olympics

■ IBM got raked over the coals by the media and other Olympic observers last week because of problems involving its computers at the heart of the Olympic event results system. The systems problems prevented users from getting timely event results via the IBM Olympic Web site, which was profiled in *Network World* earlier this month (*NW*, July 15, page 6). The parallel SP2-based Web site itself experienced only a few hiccups, easily handling up to 15 million hits a day.

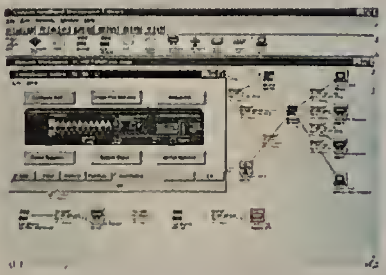
IBM FOLLOW-UP

Coming in loud and clear

■ PictureTel Corp. in Danvers, Mass., will show new videoconferencing technology this week and announce new pricing for existing products. The company will highlight interoperability between its desktop and room-based videoconferencing systems, and will show off its Video Phone technology, which lets PC users make calls over analog phone lines.

Right on schedule

■ More than 30 companies gathered last week at a Netscape Communications Corp.-sponsored "Internet Calendaring Summit" to begin work on a standard for sharing group scheduling information over the Internet. At the meeting, held at Netscape headquarters in Mountain View, Calif., the group broke down the specification into definable chunks, said Mark Szelenyi, product manager at Netscape.



It also affirmed its commitment to earn recognition as an IETF working group, he said. The vendors plan to gather again, possibly in early December, and hope to have a draft spec in six to eight months.

Netscape, Microsoft browsers gain support

■ Six more European telecommunications companies will bundle Netscape Communications Corp. software with Internet access and intranet hosting services. Netscape last week said it has signed on the telephone companies of Austria, Finland, the Netherlands, Italy, Spain and Sweden.

Separately, AT&T last week added Microsoft Corp.'s Internet Explorer as a browser alternative to Navigator for its WorldNet Internet access services.

GDC, Attachmate bond

■ General DataComm, Inc. last week announced it has partnered with Attachmate Corp. to bring remote access software to GDC's family of T-1 access devices. A new integrated product, dubbed SpectraComm RLN, will allow remote users to run applications, access a host and send electronic mail messages just the way they would if they were locally connected to the LAN.

Sun to make messaging push

SunSoft leads pack of companies readying enterprise mail servers based on 'Net protocols.

By Barb Cole

SunSoft, Inc. is readying a high-end electronic mail server built from the ground up around 'Net protocols as well as a Java-based mail client.

The offerings are designed to address a growing demand for standards-based messaging products that can span corporate intranets and the Internet.

Other Internet leaders, such as NetManage, Inc. and Netscape Communications Corp., are also developing enterprise-class mail servers around Internet protocols. Even the leading vendors of proprietary messaging systems — Lotus Development Corp., Microsoft Corp. and Novell, Inc. — are busily extending their products to embrace the 'Net.

"The messaging waters are boiling," said Dan Blum, a principal at Rapport Communication, a market research firm and consultancy. "Just as the client/server messaging market was starting to hit its stride, the 'Net phenomenon took off."

Increasing scalability

In SunSoft's case, its messaging strategy will build upon its existing Solstice Internet Mail product, a client and server combination that shipped last month and is aimed at departments and small firms.

"This calendar year, our focus is on moving up in scalability," said Roger Nolan, group marketing manager at SunSoft. He said SunSoft will take the wraps off several messaging products this fall, including an Internet Message Access Protocol 4 (IMAP4)-compliant mail server.

The server will include advanced security, an X.500-like directory with a Lightweight Directory Access Protocol (LDAP) interface, gateways to other mail systems and Simple Network Management Protocol hooks to the company's network and systems management platform. It is expected to enter beta tests as early as the fourth quarter.

Instead of supporting a workgroup of 50 as the current product does, the high-end mail server is expected to support several hundred users or more. It will be positioned as a standards-based alternative for companies looking to migrate from proprietary LAN-based mail systems or looking to consolidate disparate mail systems, Nolan said.

In addition, SunSoft will offer a Java-based mail client and an API with which customers can build collaborative applications, according to Nolan.

A Java-based mail client will let users embed live applets in E-mail so messages can trigger events, Nolan said. The client will be cross-platform and run equally well on desktop and laptop computers, he said.

"If you're bound to SMTP and POP3, these offerings can look compelling," Usher said. "Someone that's using Notes already thinks they have the best mail client and that SMTP is ugly mail."

Not alone in this market

Separately, TCP/IP veteran NetManage is gearing up for its own fourth-quarter rollout of an enterprise-scale mail server. That offering is expected to initially support Post Office Protocol 3 (POP3), and add IMAP4 compatibility in its second release. The enterprise messaging server will round out the company's low-end and mid-range standards-based mail servers, according to Evan Knutilla, director of messaging products at NetManage.

He declined to compare the user capacity of the new offering with the company's existing mail servers.

A sampling of Internet mail servers

Product	Vendor	Protocol support
Simeon	ESYS Corp.	IMAP4
Internet Messaging Server	ICL TeamWare	IMAP4, POP3
Post.Office	Software.com	POP3
Mail Server	Netscape	POP3
Siren Mail Server	Siren Software	IMAP2, POP3
PMDF	Innosoft	IMAP2, POP3
NetMail/3000	3K Associates	POP3
Solstice Internet Mail	Sunsoft	IMAP4
Post.office	NetManage	POP3

In addition, Internet heavyweight Netscape is preparing an IMAP4-compliant mail server for release later this year.

Mail servers based on Internet standards are attractive because they offer interoperability between corporate mail systems and Internet mail, and a strong platform for collaborative, Web-based applications. To date, however, such products have lacked the strong mail clients, directories and administrative tools that are available in proprietary client/server mail systems.

Users are closely eyeing mail servers based on 'Net standards.

"If you're bound to [Simple Mail Transport Protocol] and POP3, these offerings can look compelling," said Phil Usher, first vice president of groupware at Countrywide Mortgage in Simi Valley, Calif., which has about 6,000 Lotus Notes seats. However, the choice is not so clear for Microsoft or Lotus shops, he said. "Someone that's using Notes already thinks they have the best mail client and that SMTP is ugly mail," Usher said. ■

HOW TO REACH US

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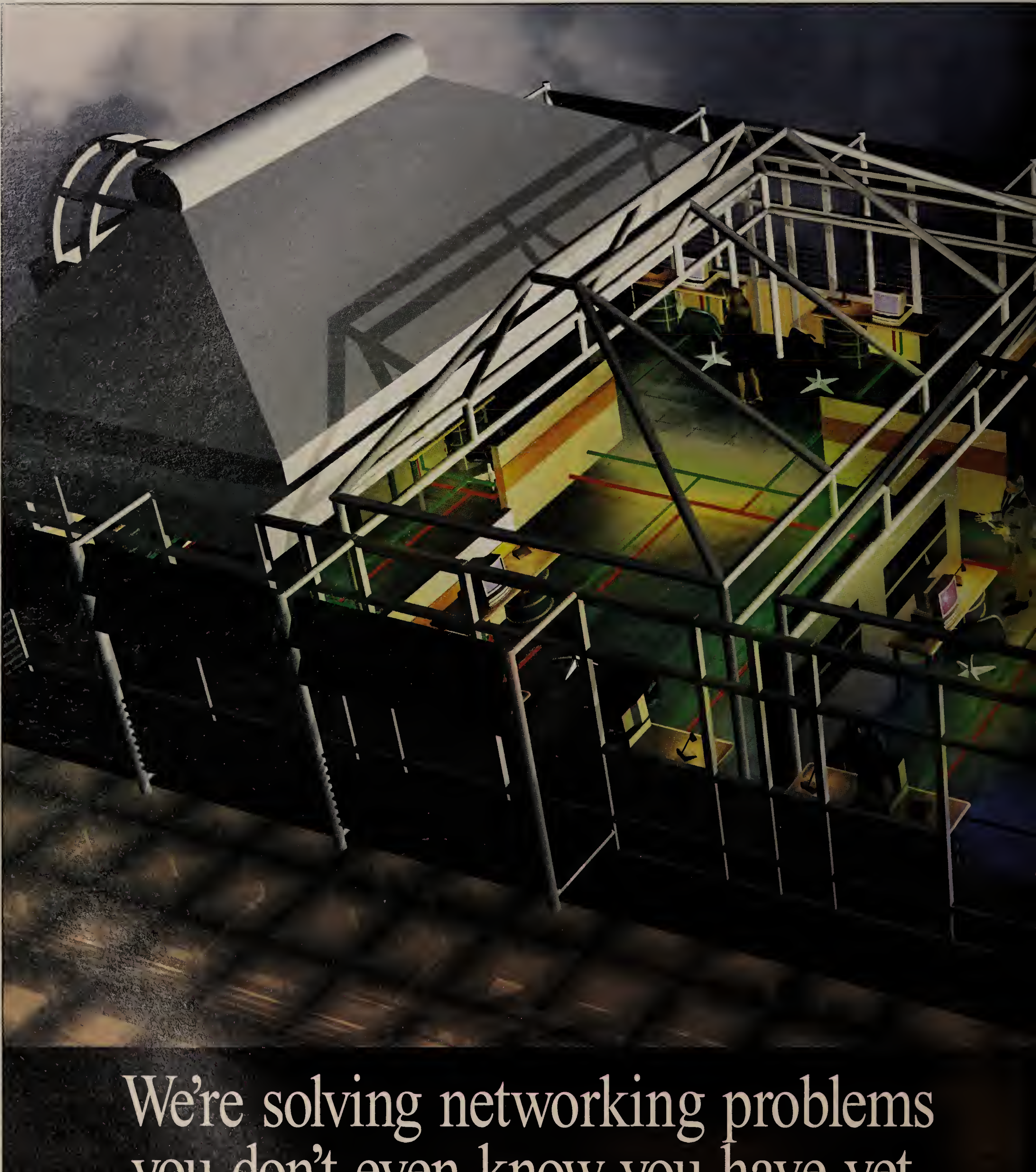
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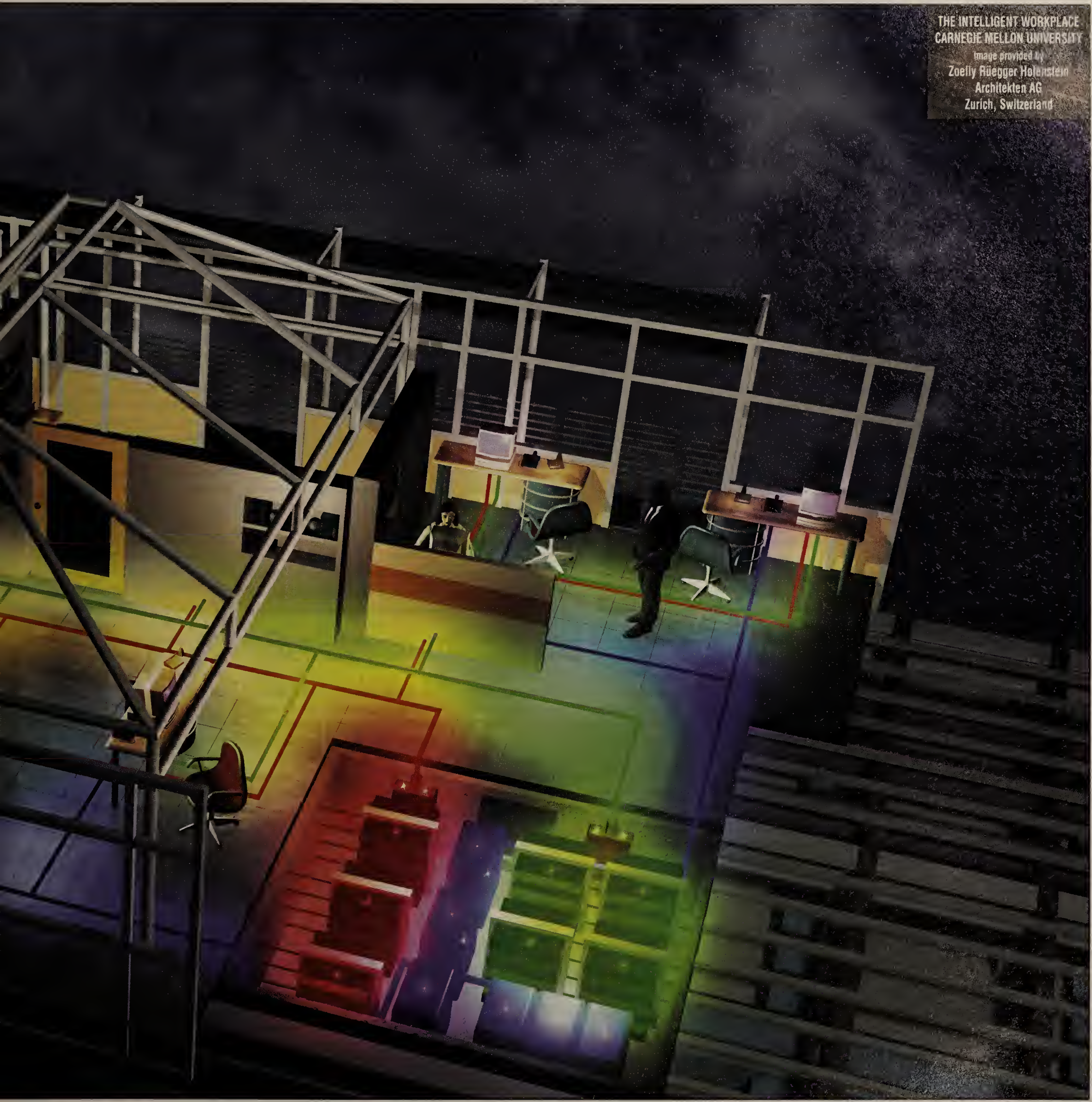

THE INTELLIGENT WORKPLACE
CARNEGIE MELLON UNIVERSITY
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Intel clarifies interactive networking over Internet

By Joanie Wexler

Burlingame, Calif.

Intel Corp. last week added depth to its vision of interactive, multimedia networking over the Internet, announcing a telephony applet and a videostreaming technology trial.

The company said a beta version of the Intel Internet Phone for Windows 95 is now available from its Web site (http://www.intel.com). The phone is the first to support the recently approved H.323 standard for running audio and video over packet-switching networks, such as the Internet.

WHAT IS H.323?

A standard for handling audio and video calls over packet-switched networks, such as the Internet. It specifies:

- Call control – the negotiation involved in a call setup
- How packets are exchanged via the new Real-Time Protocol
- The codec scheme for audio and video compression

Intel also announced a partnership with Sony Music Entertainment, Inc.'s Columbia and Epic Records groups to test videostreaming technology from Intel.

Streaming prevents users from having to download huge video files and store them before playing them back, which is a lengthy process using today's 28.8K bit/sec dial-up Internet access lines, said Frank Gill, executive vice president of Intel's Internet communications group.

Streaming was used in a video store cyber-shopping demo, which allowed shoppersto view a media clip from the movies they wanted to purchase.

Web phone woven

The Intel Internet Phone integrates with Web browsers and can add voice to commerce-oriented applications. For instance, most online retailers have not considered how Web visitors can find out more information from a knowledgeable salesperson, said Alan Weiner, an Internet analyst at Dataquest, Inc. in San Jose, Calif.

"If a customer sees a phone number [on a home page] that requires him to make a second call over a regular phone line — boom! He's likely to just give up," and the sale will be lost, Weiner said.

H.323 — which other 'Net telephone makers plan to support — will eventually allow different packet-based phone and video software packages to interoperate. Intel's own ProShare conferencing system is slated to support H.323 by year-end, said Timothy Dowling, an Intel marketing manager.

Unfortunately, Intel's telephony software does not yet support echo cancellation. As a result, speakers with inexpensive headsets and microphones may hear their own words bounce back to them and wind up talking over each other.

Intel also launched its Internet Media Developers Support Program to help developers deliver more robust applications to run on new PCs with more powerful processors. ■

Lucent, Nortel turn to FRAD vendors

By David Rohde

Lucent Technologies, Inc. and Northern Telecom, Inc. last week made moves to round out their WAN access offerings, particularly for customers' frame relay networks.

The two big manufacturers of private branch exchanges turned to established vendors of frame relay access devices (FRAD), taking the occasion to push the idea of voice over frame relay.

Lucent said it will resell multiservice branch office switches from Phoenix-based Hypercom, Inc. Hypercom's Integrated Enterprise Network (IEN) switches provide FRAD capability to enable multiprotocol traffic — such as that originating in IBM SNA devices — to travel across a frame relay WAN.

HYPERCOM'S INTEGRATED ENTERPRISE NETWORK SWITCHES

These voice and video traffic, and will be available from Lucent.

Product	Chassis slots	Key additional feature
IEN 5000 central/ regional concentrator	16	Contains 2-256 ports
IEN 4000 high-end branch node	8	Supports WAN connections up to DS3, including ATM
EN 3000 branch node	6	Supports WAN connections up to DS1
IEN 2000 low-end branch node	2	Stackable

All products serve as frame relay access devices for multiprotocol traffic, including SNA.

SOURCE: HYPERCOM, PHOENIX

The AT&T spin-off also cited the IEN's time-division multiplexing capability of taking voice traffic off PBXs and sending it across a frame relay net alongside data traffic.

Lucent already resells Bay Networks, Inc.'s complete line of routers, but Hypercom President Paul Wallner said his company's products will fill an important need beyond router capability. Lucent customers that need to send IP and IPX traffic from branch offices into a frame relay or other WAN cloud should choose the Bay products, Wallner said. But he said those that want to send any other type of traffic, including voice, video or SNA data transmissions, should opt for the Hypercom line.

For its part, Nortel has signed a three-year agreement with Motorola Information Systems Group to resell Motorola's Vanguard FRADs. Nortel's Magellan Passport enterprise Asynchronous Transfer Mode switch already supports frame relay. But it does not currently support Synchronous Data Link Control for SNA traffic, explained Terry Bruder, Nortel's senior manager of marketing services. The Vanguard FRAD is ideal for branch offices needing at least one port for SNA data, Brunder added.

Nortel officials said the Motorola resale agreement would round out its access offerings, along with the inclusion of products from Micom Communications Corp. (a company Nortel bought earlier this year). ■

Microsoft launches beta test for its OLE DB

By John Cox

Redmond, Wash.

Microsoft Corp. has quietly launched the beta test of its object-oriented database access interface, called OLE DB.

Among the surprises is the inclusion of a technology developed by a Massachusetts company that is building what may be the first OLE DB product to hit the market later this year.

The OLE DB interface is a critical test for Microsoft and its customers because it will be the first major extension of the company's Component Object Model (COM), the linchpin for Microsoft's enterprise computing strategy. Microsoft is adding OLE DB to an array of current and future products.

Two weeks ago, Microsoft sent out about 250 beta versions of the OLE DB software development kit (SDK), which includes the API specification, sample code and test tools. There have been "many hundreds" of requests for additional copies, according to Greg Nelson, Microsoft data access product manager. Applications and tools using the OLE DB interface can transparently access nonrelational data sources as well as databases and drivers based on Microsoft's existing Open Database Connectivity (ODBC) interface, Nelson said.

Conversely, through a software bridge developed by International Software Group (ISG), Inc., of Burlington, Mass., existing ODBC applications can use OLE DB to access nonrelational data sources. Microsoft has licensed the software and included it in the SDK. The bridge supports the ODBC 2.5 specification.

"Functionally, OLE DB will have a ways to go, and performance may be lacking," IDC's Acly says.

The OLE DB object interface will let applications access all types of data — relational tables, flat files, mainframe hierarchical databases and PC spreadsheets. By contrast, Microsoft's widely implemented ODBC technology requires fairly detailed programming and works only with relational databases. For OLE DB, Microsoft has, in effect, wrapped a COM interface around ODBC.

Other vendors are trying to solve the same problem but none are as ambitious as Microsoft, said Ed Acly, director of middleware research at International Data Corp. in Framingham, Mass. "It will take a while to achieve this," he said. "Functionally, OLE DB will have a ways to go, and performance may be lacking."

OLE DB will be implemented as C code in products from database, tool and language vendors. Third-party vendors and corporate developers can create OLE DB drivers for specific data sources. To make OLE DB even easier to work with, Microsoft will add a higher level ActiveX Automation (formerly called OLE Automation) interface that will sit on top of OLE DB.

ISG apparently has gone further than any other company in exploiting OLE DB. The bridge software is, itself, one component of the ISG Navigator, now in beta test. Navigator is a complete, client/server middleware product that uses OLE DB interfaces to let applications access almost any type of data on any platform. It will be sold separately and will also be included with the upcoming release of ISG's CorVision, which is a server application generator. ISG will include a set of OLE DB drivers to various data sources. All components will run on a range of client and server operating systems.

The bridge will be ready to ship by the end of August for inclusion with the Microsoft SDK. The full Navigator product will be ready by year-end. Pricing has not been finalized. ■

CORRECTION

In the July 8 ATM switching review (page 37), the pros and cons listed for 3Com's LinkSwitch 2700 were incorrect. They should have read:

Pros

- Quick install; good use of default parameters for most settings; fast-start setup via terminal console.
- Cut-through and store-and-forward modes.
- Bundled-in Transcend for Unix is best management application of switches tested.
- Supports UNI 3.0 and 3.1.

Cons

- No online help.
- Documentation is inadequate for connection setup via an ATM network.
- Complex terminal console command line interface.
- Incapable of filtering too-long/jabber packets, allowing them to pass between Ethernet and ATM.

New tools build true self-service Web apps

By John Cox
Needham, Mass.

In theory, the World-Wide Web is supposed to give access to vast amounts of information. But in practice, this too often means you come face-to-face with data that is hard to sift through and even harder to understand. And that's for simple stuff.

New products from ServiceSoft Corp., based here, attempt to create Web applications that guide users through even more complex processes, such as diagnosing a software problem or configuring equipment and furnishings for large offices.

Knowledge Builder lets problem-solving experts design "knowledge bases" — collections of information combined with different techniques for analyzing problems and suggesting solutions.

The second product, WebAdvisor, is accessed through a Web server. Users select or type answers to questions, which are passed to the knowledge base. WebAdvisor formats the answers into pages that are displayed on the user's Web browser.

Web applications require a radical rethinking in terms of data navigation and presentation, according to Hugh Bishop, director of emerging technology research at Aberdeen Group, Inc., a Boston market research company. "A Web application has to be immediately intuitive to the user," he said. "ServiceSoft is the first vendor I've seen with available products that are built purely on 'Net technologies."

Until now, ServiceSoft marketed PC software used by field service staff to help them diagnose a customer problem. Then a year ago, the company saw that the Internet could let customers avoid an on-site field service visit or a phone call to a support center, President Dave Tarrant said.

Internet software vendor NetManage, Inc. will use the ServiceSoft products to replace its existing support system, based on a flatfile database, said Doug Pluta, electronic support specialist at NetManage in Cupertino, Calif.

NetManage will use the ServiceSoft applications to build a consistent knowledge base, accessed via the Web, for all NetManage products. Additions to this information will be reviewed by the respective experts and the final result replicated to databases at all NetManage sites.

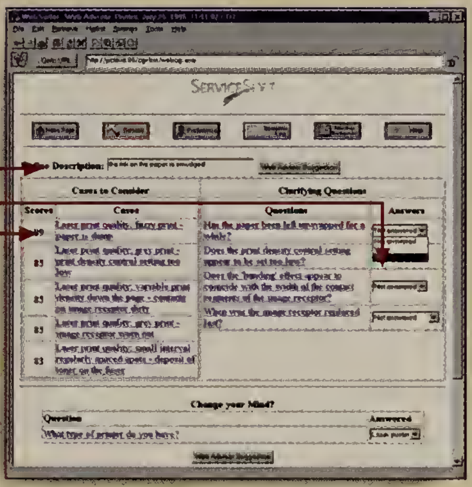
Both products are available now. Knowledge Builder costs $5,000 per developer license. WebAdvisor is priced at $1,500 per concurrent user session.

☎ServiceSoft: (617) 449-0049.

WEBADVISOR

This Web-based application works with a knowledge base that guides end users in solving complex problems.

1. Specify problem
2. Answer questions posed by knowledge database
3. Select from rank-ordered solutions for more details



Cisco spends $200m on modems

By Jim Duffy
San Jose, Calif.

On the heels of a similar move by rival Bay Networks, Inc., Cisco Systems, Inc. last week purchased the digital modem business of Telebit Corp. for $200 million.

Telebit's Modem ISDN Channel Aggregation (MICA) technology will be added to current and future Cisco dial-access products, including the Cisco 2509-2511 access servers and the AS5200 Universal Access Server.

The MICA technology will also provide greater dial densities, more flexibility, faster time-to-market and investment protection for new and existing access server customers, Cisco said. More significantly, it can reduce per-port costs of access servers by 50%, said Kevin Kennedy, vice president of Cisco's Access business unit.

Access servers could cost less than $500 per port next year, down from between $1,000 and $1,500 a year ago, Kennedy said. Similarly, port densities will soon number between the hundreds and 1,000, from today's densities of 40 to 100 ports, he said.

Cost reduction was one of the drivers behind Bay's $120 million acquisition of Penril DataComm Networks, Inc.'s digital modem operations last month (*NW,* June 24, page 14). By acquiring modem companies, both Bay and Cisco are attempting to feed users' voracious appetites for dial-up ports to handle the exponential growth of Internet access.

Cisco's 2509-2511 access servers currently sport asynchronous dial-up ports, while the AS5200 houses modems developed by Microcom, Inc.

The Microcom modems will continue to ship in the AS5200 "for some time," Kennedy said, adding that Cisco intends to continue its relationship with the modem company. About 50 Telebit staffers will form the Dial Technology Division within Cisco's Access Business Unit and will be located in Cisco's Chelmsford, Mass., facilities.

Cisco expects the agreement will result in a onetime charge against after-tax earnings of between 22 and 25 cents per share in its first fiscal quarter of 1997 as a write-off of in-process research and development. The transaction is expected to be completed by the end of October. ■

Download a Telebit white paper on its MICA technology from Network World Fusion. From main menu select News+.

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W3C

Continued from page 1

what seems a struggle to the death, the companies are racing to get new, proprietary features into their browsers and servers in order to win market share.

The threat is particularly acute from Microsoft, which is tightly packaging its Internet offerings with widely used products such as Windows 95 and Windows NT. Some say the company is trying to leverage the products' market share to establish its Internet-related technologies, such as ActiveX, as de facto standards.

AlliedSignal's *Kapoor doubts W3C will keep vendors from doing their own things.*

If the companies are successful, the traditional openness of the Web — achieved in large measure by the W3C — would disappear. Customers and developers would have to build their Internet/intranet applications on terms dictated by one or both vendors and would be faced with bridging the incompatibilities in Microsoft's and Netscape's technologies.

That has already begun, said Eric Brown, senior analyst at consultancy Forrester Research, Inc. here. Brown said it is not uncommon these days for Webmasters to put up two types of HTML content on their Web server — one that a Microsoft browser can read and another a Netscape browser can read — since the two interpret HTML content differently.

NECK AND NECK IN THE RACE TO ROLL OUT WEB BROWSERS

Microsoft Internet Explorer

V1.0 - Aug. 24, 1995
2.0 - Nov. 27, 1995 (for Windows 95 and NT)
April 23, 1996 (Macintosh)
April 30, 1996 (Windows 3.1)
3.0 - Due in August
4.0 - Expected by year-end

Netscape Navigator

1.0 - Dec. 1994
2.0 - Feb. 1996
3.0 - Due in August
4.0 - Expected by year-end

"The vendors have built their businesses on the Web by extending HTML. The consortium has tried to rein in existing enhancements done by both, but I don't think it has a tremendous amount of clout," added David Smith, an analyst at consultancy Gartner Group, Inc. in Stamford, Conn.

Gerry Bakker, president of Commerce Direct International, Inc., which sells software for handling Web-based electronic commerce transactions, keeps a close eye on both Microsoft and Netscape since his business now hinges on what these two vendors do.

"At a technical level, there is uniqueness. ActiveX makes the Microsoft browser unique, although the plug-in from NCompass allows the Netscape browser to handle ActiveX," Bakker said. "Each of them is experimenting with extensions, but each has to support the other's initiatives at this point."

The Intellimouse device announced by Microsoft last week allows you to drill down into Web pages, but it only works with Microsoft Explorer at this point, Bakker noted.

Thomas Reardon, Microsoft's representative to the W3C, denied that Intellimouse is proprietary, saying: "It's proprietary like television is proprietary. Any application on the planet can support it. Everything will be fully published on all the interfaces into the new mouse driver. I hope Netscape and all the other browser vendors support it. They just have to spend the time to invest in it."

Defending Microsoft's overall Internet strategy, Reardon said, "Whenever we say 'open,' we really follow through on the commitment. We want to make sure we are doing the right things with these organizations, whether it be the IETF or the W3C.

Smith, *an analyst with Gartner Group, says W3C has little clout.*

"I think other companies started on an open path, implementing open protocols, and have veered from that. Netscape's defense [when it does something proprietary] is to say 'Look at Microsoft.' That's not a defense."

Netscape's Carl Cargill, a standards strategist, defended his company, stressing its commitment to open standards. "If we are proprietary, we will fail in the market, and we are very aware of that. What you are seeing is Microsoft embracing standards because they are not a dominant market player . . . But I don't think Microsoft understands standardization very well because they haven't had a presence on a lot of committees."

But Cargill acknowledges that vendors have to push ahead of the standards process. "We will put something out. If the market uses it, the market will drive it to standard. If the market doesn't use it, why drive it to a standard? And we will innovate on top of that standard again."

Several other vendors, including Sun Microsystems, Inc., Microsoft and Apple Computer, Inc., "all seem to be recycling some of their technologies into Web products," said W3C member Patrick Soquet, director of research and development at Havas Edition Electronique, a division of the France-based multimedia content provider and advertising conglomerate, Havas.

Soquet said proprietary technologies are sometimes "fun to work with" and provide advances beyond the lowest common demoninator of Web standards. However, it takes Web users extra effort technically to enjoy them due to their proprietary nature.

Past triumphs

The Microsoft/Netscape battle threatens to undermine the solid work of the W3C thus far in keeping the Web open and thriving. By defining extensions to the baseline HTML technology invented by Tim Berners-Lee, the W3C has helped speed the pace of development for Web browsers and servers. And when politicians in the U.S. said the only way to keep kids from Web sites with sexual content was through censorship, the W3C came up with the Platform for Internet Content Selection (PICS) to control access to Web content through a browser.

Even W3C Director Berners-Lee acknowledged the Web community may be growing apart. "Clearly, there is a threat that one dominating player will seize market domination through proprietary standards," he warned.

If the Web ends up as fiefdoms controlled by a few vendors, the W3C's role in advancing the Web could become irrelevant. Some W3C members share this worry.

"I hope Microsoft and Netscape realize that a massive introduction of proprietary features in their products would be like killing the Web," said W3C member Franco Guadagni, the senior system engineer setting up Telecom Italia's Internet services in Italy.

Ajit Kapoor, manager for infrastructure architecture standards at AlliedSignal, Inc., harbors doubts that the W3C can manage to keep vendors such as Microsoft and Netscape from charging off in their own direction as they try to capture market share.

PART TWO

AlliedSignal just purchased a Netscape license for 36,000 browsers as part of a $70 million initiative to install a Web-based intranet using high-speed 100M bit/sec Ethernet switching.

"In a capitalist system, they have to make profits, and we're concerned these browsers will end up proprietary," Kapoor said.

As the issue of market control arises, the W3C finds itself at a crossroads with the departure of its chairman and founder, Al Vezza, who is leaving the group in September.

Rumors last week circulated that Vezza was ousted by W3C members dissatisifed by the slow and irregular pace of standards works. But Berners-Lee, Vezza and his boss, Massachusetts Institute of Technology Computer Lab Director Michael Dertousas, called the rumors unfounded and irresponsible.

Prodigy Services' *Ek has helped the W3C convince major players to buy into industry standards.*

Vezza, now associate director of the MIT Computer Lab, said he is opting for an early retirement plan offered by MIT and is considering other projects.

Vezza predicted the W3C has at least six more years of vital activity in front of it. When Web technology is suitably evolved and stable, the W3C "ultimately will phase out, and that's not a bad thing," Vezza noted.

Jean-Francois Abramatec, head of the France-based Institut National de Recherche en Informatique et en Automatique (INRIA), which coordinates the W3C work with MIT, will continue as W3C cochair. MIT is well along in its search for a replacement for Vezza, said Dertousas, who declined to name the candidates.

Berners-Lee called Vezza's departure from the W3C a "great blow," but said the W3C has a "rock-solid foundation, and it's based on neutrality."

Clearly, many W3C members are confident the W3C's importance will endure.

Brian Ek, vice president of government affairs at Prodigy Services Co. and W3C member, said the W3C has emerged as the only group that could convince players such as Microsoft, IBM and Netscape "to buy into the vision that consistent standards are good for the industry."

"I'm not worried about the W3C's long-term viability," Ek said. "The industry doesn't want to repeat past mistakes — the lack of a common set of standards." ■

Where are all the users?

Though software vendors and telecommunications providers now crowd the World Wide Web Consortium's planning and technical meetings, the W3C is short on members that speak for the interests of customers.

The few users that can be counted, such as Dassault Aviation SA, Michelin and Reed Elsevier plc, mostly hail from Europe. Tim Berners-Lee, director of the W3C, acknowledges the group is missing a vital ingredient: a U.S. user base. "We did more outreach to the user community in Europe," Berners-Lee admitted. "In the U.S., we've been lazy."

Al Vezza, W3C chairman and founder who will retire this September, said there is apathy in the U.S. user community compared with Europe. "Companies in Europe understand that to get what you want, you have to sit at the table and press for your point of view," Vezza said.

"There should be more companies like mine involved in the W3C," added Patrick Soquet, director of research and development at France-based Havas Edition Electronique, a division of the Havas media and advertising conglomerate.

"They will help practical Web technologies become Web standards," he said.

Worse, the user gap may contribute to the perception that the consortium does not have the clout to hold the Web together.

"The Web consortium doesn't have teeth," said Ajit Kapoor, manager for infrastructure architecture standards at AlliedSignal, Inc. "The consortium is just a playground for vendors."

—*Ellen Messmer*

Bay

Continued from page 1

replacement is "going to be someone who has seen that, been there and is going to be able to help execute and scale up the company," he said.

Missed opportunities

Bay was late coming out with key LAN switching products, analysts said. Though products are shipping now, anticipation and early sales have eaten into Bay's core hub sales.

"Their hub business is troubled," said Luke Szymczak, an analyst at Prudential Securities, Inc. in New York. "They have a transition going on in switching and they had some trouble in the stackable business as well as in the modular hub business."

"They were late to market in the low-cost, workgroup frame switching market segment. . .and they really don't have a strong story in the telecom area, which is one of the hottest growth markets in the industry," Lippis said. "It's those missed opportunities that are starting to catch up to them."

More specifically, Bay is failing to win new accounts because it cannot bid a competitive Asynchronous Transfer Mode switching product, said Melinda Le Baron, director of Gartner Group, Inc.'s Network Computing Infrastructures group.

"The fact that they had to back away from their first ATM implementation with the LattisCell products, and move onto a substantially lesser implementation in the Centillion products, does put them in an interesting position," Le Baron said. The Centillion products lack ATM traffic management and Private Network-to-Network Interface capabilities, which she said will not appear until mid-1997.

Bay also has trouble instilling the level of confidence in customers that Cisco can, analysts said.

"The problem that Bay has had more than any other vendor in the internetworking space is they've been technocentric," said Thomas Nolle, president of consultancy CIMI Corp. in Voorhees, N.J., of which Bay is a client. "Instead of going out and saying to the user 'We're going to make your networks feel wonderful,' they've gone out and said, 'We're going to tell you the 79 technical details which, if they're properly implemented, will result in wonderful-feeling networks.' "

In the rumor mill

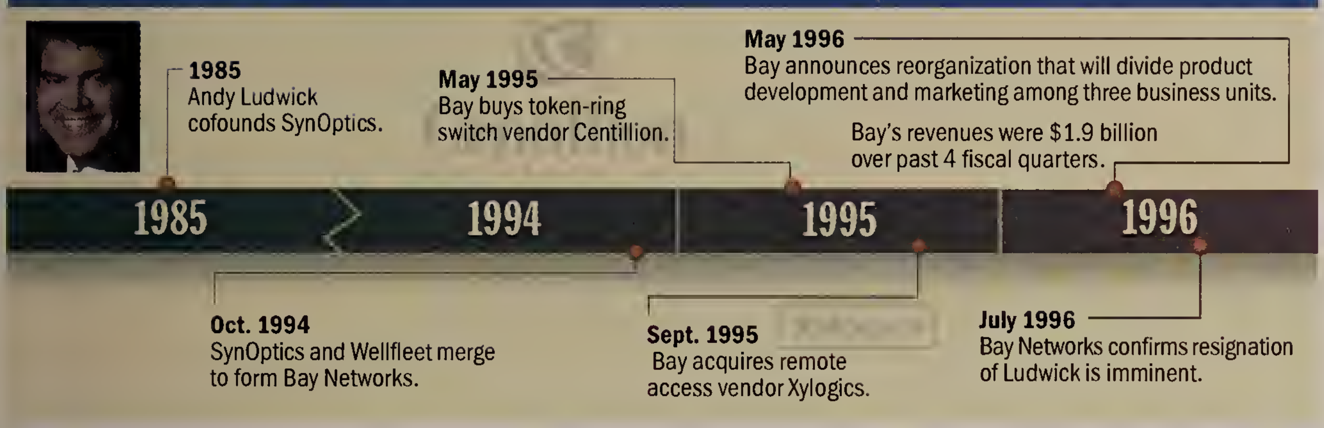
Ludwick's departure has been the subject of rumors for months, but indications of a shakeup surfaced in the spring when the company reorganized into three customer-focused business units. Then last week, before the Ludwick news broke, Bay said sales chief Gary Bowen was stepping down.

Ludwick's imminent departure is in keeping with his self-imposed 10-year term limit, a company spokesman said.

But it also comes after a second consecutive unimpressive quarter by Wall Street standards and as Bay's stock price hovers near its 52-week low. At the same time, rivals Cabletron, Cisco and 3Com continue to meet or surpass Wall Street's expectations.

Users seemed unfazed by it all. "It doesn't matter," said Hank Wright, director of network services for Hughes Direct TV in Los Angeles. "I have enough confidence in them that they'll be able to pull it off with or without [Ludwick]. ■

Ludwick's legacy at Bay


1985
Andy Ludwick cofounds SynOptics.
May 1995
Bay buys token-ring switch vendor Centillion.
May 1996
Bay announces reorganization that will divide product development and marketing among three business units.
Bay's revenues were $1.9 billion over past 4 fiscal quarters.
1985
1994
1995
1996
Oct. 1994
SynOptics and Wellfleet merge to form Bay Networks.
Sept. 1995
Bay acquires remote access vendor Xylogics.
July 1996
Bay Networks confirms resignation of Ludwick is imminent.

Bay's other management changes

While Bay Networks, Inc. prepares a changeover in company management, it has already finished a few changes to its management products.

Bay last week rolled out some new Optivity 7.0 management applications for switched environments, as well as a stackable Remote Monitoring (RMON) probe for Fast Ethernet LANs.

The new applications include Optivity Analysis 7.0 and Optivity Planning 7.0. Optivity Analysis gathers data from RMON agents and probes to analyze traffic patterns and isolate faults on Ethernet, token-ring and FDDI LANs.

Optivity Analysis 7.0 features full integration of Bay's OnSite RMON and RMON2-like tools for monitoring network traffic by segment, device or protocol. OnSite was obtained from Bay's acquisition of Armon Networking, Ltd. last year.

Optivity Planning 7.0 provides network trending reports and simulation modeling. It combines the previously separate NetReporter and DesignMan products.

The Fast Ethernet probes are extensions to Bay's StackProbe line of stackable segment monitors. They include the single-port FE100 and the dual-port FE200 for monitoring conversation on switch-to-switch, switch-to-server and switch-to-shared Fast Ethernet links.

Optivity Analysis 7.0 is available now. Optivity Planning 7.0 will be available in September. Both products cost $5,995. The FE100 and FE200 are priced at $5,995 and $8,995, respectively. They will be available in August.

—Jim Duffy

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HP

Continued from page 1

platform, other systems vendors such as HP with its NetServer line are pushing onto the trail blazed by Compaq, an early adopter of the Intel architecture.

Compaq's strengths are a firm grasp of the PC LAN environment, a reputation for quality and a strong value-add in configuration and management tools. With new Pentium Pro systems and a clustering initiative in place, Compaq is moving toward its goal of becoming an enterprise-class systems vendor.

That's where Compaq and HP will really butt heads. The increasingly assertive HP boasts a comprehensive service and support infrastructure, and has established relationships with corporate chief information officers. HP is bringing the skills and experience gained through years of selling Unix and Reduced Instruction Set Computing (RISC)-based systems into corporate accounts to the Intel server market.

"You have two successful companies that are now moving into each other's bailiwick,'' said Jerry Sheridan, an analyst with Dataquest, Inc., a San Jose, Calif.-based consultancy. "The conflict cannot be avoided.''

"The challenge for us is to figure out how to marry this corporate enterprise strength with some of our NetServer opportunities that are coming up from the workgroup and the department."

Duncan Campbell, HP's worldwide marketing manager

"I'm not saying there's not going to be Unix in the world, but the growth is going to come from non-Unix, Intel offerings. The price-performance story is just too strong."

Ross Cooley,Compaq's senior vice president and general manager for North America

How do Compaq and HP stack up against one another? The comparison begins with what's in the boxes.

Technology

When it comes to pure technology, Compaq and HP are pretty tightly matched. Both have broad product lines, with 15 or more configurations to choose from.

Analysts give Compaq the nod in the low-end of the market, owing to its years of experience selling systems — primarily Novell, Inc. NetWare-based machines — for file and print chores. For its part, HP has a broader background at the application server level, with its expertise in delivering Unix boxes.

HP is trying to transfer that knowledge to the Intel space as multiprocessor Pentium Pro boxes running Windows NT take over more of those application chores, said Jon Oltsik, an analyst with Forrester Research, Inc., a Cambridge, Mass., consultancy.

HP's early adoption of the PCI standard may give it a slight benefit in what can sometimes appear to be a pretty homogenous Intel server field. PCI makes it easier for customers to attach hubs, routers and storage components, among other things, to a server, and that makes it easier to build workgroup or remote office networks. Compaq has also adopted PCI, but trails HP in PCI experience and support.

Installation tools

Making it easier to install and configure servers goes a long way toward winning customer converts, and Compaq is the industry's acknowledged leader with its rich SmartStart utilities. SmartStart has evolved from a simple CD-ROM-based installation tool for operating systems to an open product that helps customers install and update a variety of software products.

In June, Compaq announced it would release a set of APIs for SmartStart that will let customers easily load and configure any piece of software that supports the specs — whether or not the software comes on the SmartStart disk. Compaq also offers a Web-based software distribution system for customers.

HP is also in the game with its NetServer Navigator, a management utility that includes an assistant that installs operating system software.

But HP does not include popular applications and there is no mechanism to handle software updates.

"SmartStart really gives Compaq an edge in this area,'' Dataquest's Sheridan said.

Server management

As servers take on a more important role in running key business applications, server management has become a critical issue facing the IT community. Compaq has tried to keep pace with customers by continually building on its Insight Manager, a 32-bit application that lets users monitor and manage local and remote clients and servers.

Compaq's strengths are a firm grasp of the PC LAN environment, a reputation for quality and a strong value-add in configuration and management tolls.

Analysts applaud Compaq's plans to integrate Insight Manager with a variety of management platforms, including Cabletron Systems, Inc.'s Spectrum, IBM's SystemView and HP's OpenView. "Anything the PC guys can do to play with those vendors gives them an advantage,'' Forrester's Oltsik said.

Compaq also played a prominent role in the recent announcement of a Web-based network management standards effort, which would provide customers with a universal interface — a Web browser — for managing networks.

Compaq's latest version of Insight Manager just rolled out the door, so customers are only now in the process of tying the product in with management platforms. The Web-based management standards effort is at least a year away from implementation in products.

HP also offers free server management via a set of utilities under the NetServer Navigator name. As an added benefit, the tools interoperate with HP's OpenView enterprise platform and let customers manage HP servers, as well as networking gear, from a central console.

Still, observers said it doesn't currently match the functionality of Insight Manager.

Distribution

Compaq and HP each have huge reseller channels, but while HP has used its channel for years to sell systems packages — including network gear and printers — Compaq has only recently begun pushing its channel in that direction. Analysts said it could take some time for resellers to grow comfortable with new additions to the Compaq product line, such as the Netelligent hubs and routers.

But Compaq is quick to hit HP for the potential channel confusion it has created by pushing both Intel servers and RISC platforms.

With Intel boxes reaching the performance levels of mid-range RISC machines, Compaq officials wonder how HP will justify higher prices for its PA-RISC systems. Ross Cooley, Compaq's senior vice president and general manager for North America, said HP derives big revenue from the PA-RISC systems and may not want to push the cheaper Intel-based models as aggressively.

Duncan Campbell, HP's worldwide marketing manager, admits that the company was "quite nervous about'' confusing customers.

But once the application and network operating system has been chosen, the platform — RISC or Intel — is clear to the customer, he said.

Pricing

Picking a pricing winner in the server market depends on which day of the week you try to do it. A price war is being waged in the server arena as companies try to unload Pentium-based inventory as more powerful Pentium Pro's roll out. Server vendors match each other price cut for price cut — a situation that has delighted buyers but worried shareholders

HP was once said to stand for "high prices,'' but lately it has matched its rivals, including recent price cuts on its Pentium Pro models.

And in such a competitive marketplace, list price takes a backseat to the deals most big customers can negotiate on enterprise packages that may include multiple machines, software and networking gear.

Service and support

Compaq reluctantly acknowledges that service and support is the area in which systems companies such as HP and IBM have a distinct advantage.

The Houston-based company relies on third parties for service and support, while HP's worldwide service and support organization has been in place for years and is regarded by analysts and customers as a key differentiator.

For example, a 1995 Forrester Research report graded HP's support services an A minus, while it gave Compaq a C plus. But with announcements last fall of a worldwide service agreement with Digital Equipment Corp. and support agreements with many prominent integrators such as Anderson Consulting, Inc., Compaq is beginning to address its shortcomings.

Said Tony Croes, an analyst with Currid and Co., a Houston-based consultancy: "The things that have always been missing [with Compaq] are a worldwide global support organization and a very strong consulting arm.''

HP has noted this. "Quite frankly, in these enterprise accounts, your support capabilities are literally one of their top priorities,'' HP's Campbell said.

Compaq recently tried to focus its large accounts efforts by creating the Enterprise Computing Group, headed by former Digital executive John Rose.

Networking gear

HP and Compaq are not only competing on the server front; the two are going head-to-head in offering a variety of network equipment to package with their computers. HP has sold hubs, switches and routers to the workgroup market for a lot longer than Compaq — which gained entry via the recent acquisitions of Thomas-Conrad Corp. and NetWorth, Inc., and introduced a product line based on those acquisitions, called NetTelligent, this past winter.

Who has the advantage?

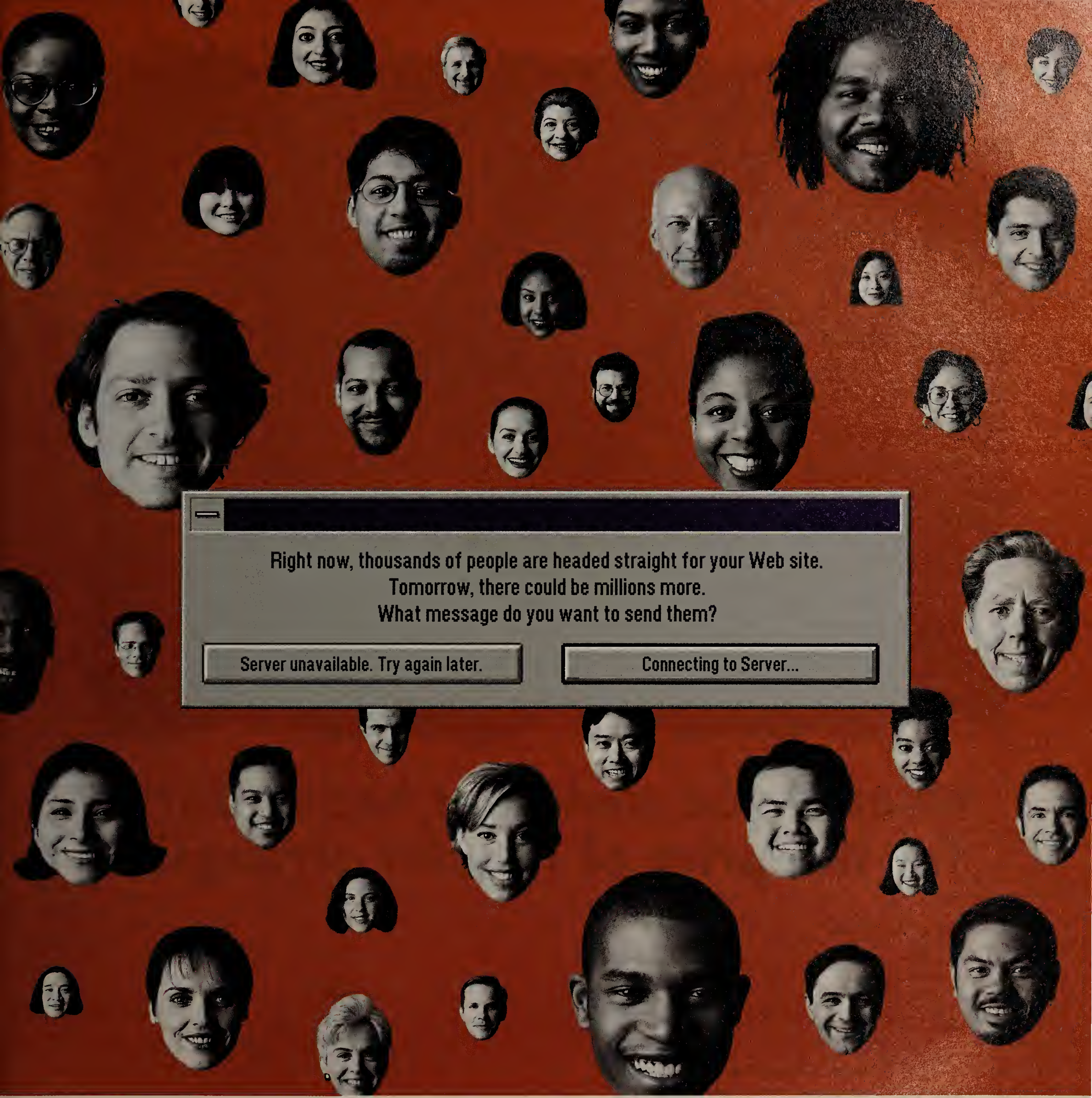
	Compaq	HP
Installation/configuration tools	■	
Server management	■	
Networking gear		■
Distribution		■
Pricing	NO CLEAR ADVANTAGE	
Service/support		■

BASED ON INTERVIEWS WITH INDUSTRY ANALYSTS.

Compaq will initially deliver stand-alone network products, much like HP, but has talked about tightly integrating its net offerings into its servers to make it easier for customers to set up workgroup and remote office nets.

But Compaq has two hurdles to overcome: supporting this new gear and selling itself as a complete network provider.

"The issue I have with Compaq is that they're approaching the networking issue just a little too cavalierly,'' said Skip MacAskill, an analyst with Gartner Group, Inc., a Stamford, Conn.-based consultancy. "Brand name is not automatically going to bring them the market share they are looking for.'' ■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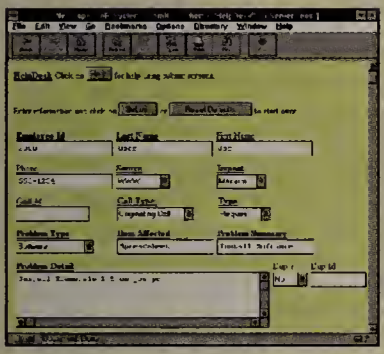
Briefs

Remedy Corp. *has rolled out a new version of its ARWeb* **help desk software** *that features data updating and security enhancements.*

ARWeb 1.1 allows Web browser users to modify information in records that already exist in Remedy's Action Request System. The new version also supports the Secure Sockets Layer protocol for encrypting communications between Web browsers and Web servers.



ARWeb 1.1 server costs $12,000. Five-packs of floating licenses cost $2,000 per seat, while fixed license five-packs cost $800 per seat. ARWeb 1.1 is available now.

Remedy: (415) 903-5200.

Landmark Systems Corp. *is now shipping* **performance management software** *for Windows NT and Microsoft Corp. SQL Server users.*

SmartAgent for Windows NT monitors, manages and reports on the performance of scores of NT and SQL Server servers in multiple network domains. Domain Station for Windows NT offers users a graphical interface for viewing this performance data.

The software costs $10,000 in a typical configuration, Landmark said. The products are available now.

Landmark: (800) 333-8666.

NetEdge Systems, Inc. *has signed a reseller agreement with NTT International Corp., a subsidiary of Nippon Telegraph & Telephone Corp. in Japan. NTT International will resell NetEdge Systems' ATM Connect* **edge routers** *to carriers that can then use them to offer native LAN services, Internet access and a host of other services, NetEdge said.*

Ascend, Nortel try to boost PRI lines

PRI remote-access gear now available under deferred billing in Bell Atlantic region.

By David Rohde

Fairfax, Va.

Users in mid-Atlantic states can now get ISDN remote access gear on a deferred-billing basis through a program designed to get telephone companies to install more Primary Rate Interface lines.

They can do so under a program known as Information Express, which is spearheaded by central office (CO) switch maker Northern Telecom, Inc. and involves Ascend Communications, Inc., Bell Atlantic Corp. and Bell Atlantic agents specializing in ISDN.

Nortel is purchasing high-end Ascend remote access gear in bulk, then selling it at favorable terms through Bell Atlantic agents such as CICAT Networks, Inc., the first to participate in the program.

CICAT is supplying Ascend MAX access concentrators without charge for six months. To qualify, you must be a large end user or Internet service provider (ISP) that buys PRI service. CICAT makes sure to order ISDN PRI service for the end user or ISP from a Bell Atlantic CO that houses a Nortel DMS-100 CO switch.

That may or may not be the closest telephone company office to the user, explained CICAT President Bryant Dunetz. But under Bell Atlantic's ISDN Anywhere program, the user should not be penalized financially for getting PRI from a so-called foreign CO, Dunetz added. And Nortel gets to boost its installed base of carrier PRI ports — its prime motivation for the program.

Other integrators and value-added resellers are looking to sign up under the program, while CICAT is seeking certification outside the Bell Atlantic territory to expand its reach.

The MAX access concentrators available through the program are Ascend's three recently introduced models — the MAX 2000, 4002 and 4004 — that support one or more PRI lines (see graphic). Users must lease or purchase the Ascend equipment after the deferred-billing period.

Already popular among ISPs, the MAX 4004 concentrates traffic from four PRI lines — each with 24 digital-standard 64K bit/sec channels — for a total of 96 channels.

Instead of reserving one of each group of 24 for D-channel signaling, the MAX 4004 supports a standard that enables just one of the 96 channels to handle signaling for the entire traffic stream so that a full 95 bearer channels are available, said Chris Sousa, an Ascend national account manager in Research Triangle Park, N.C.

With six expansion slots for modem cards, each supporting 12 modems, the 4004 can also support as many as 72 calls from V.34 modems. The device automatically detects whether the remote user is dialing in over digital or analog origination.

As a result, a corporation offering remote enterprise network access — or an ISP offering Internet service — can use the same call-in number for users with either ISDN or ordinary analog phone lines, Sousa said.

©CICAT: (703) 323-7696.

Access gear for PRI users

New high-end and midsize Ascend access equipment available under Nortel's InfoSpeed program with selected integrators:

Product	ISDN PRI supports specs
MAX 4004	Supports four Primary Rate Interface ports
MAX 4002	Supports two PRI ports, but is upgradable to the 4004
MAX 2000	Supports one PRI port

All include Ethernet connections on the LAN side and expansion slots for modem cards.

SOURCE: ASCEND, ALAMEDA, CALIF.

AT&T readies software for next-generation nets

By Joanie Wexler

Murray Hill, N.J.

AT&T Laboratories is busy building software it hopes will deliver the service levels and security required for networked multimedia applications and electronic commerce.

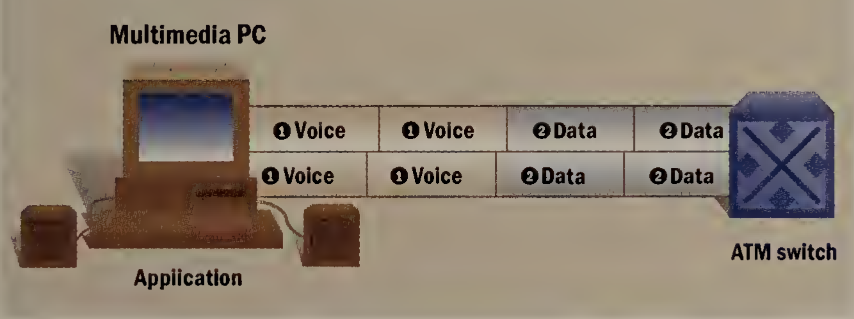
The research and development arm of AT&T is developing signaling protocols that optimize IP over Asynchronous Transfer Mode networks, said Chuck Kalmanek, head of the network research department at the laboratory. The protocols will guarantee class of service all the way to applications running on hosts and end-user devices, he said.

ATM is a set of transport protocols that offers multiple classes of service to meet the varying delay requirements of different types of traffic. An industry goal with ATM is that one day users will be able to efficiently consolidate all their traffic — voice, video and data — onto one network. So far, though, ATM classes of service are supported only on network-level devices, say, from router to router.

But when users begin using multimedia PCs for voice, data and video, the ability to prioritize traffic — such as voice always taking precedence over data to avoid garbled phone calls — must be extended all the way to the desktop, Kalmanek said. No longer will users have, for instance, a dedicated link from the private branch exchange to a phone for voice.

EXPRESSING THEIR NEEDS

AT&T's signaling software allows apps to communicate with the ATM transport net to prioritize traffic. Voice is given priority over data.



Thus, AT&T Labs has built signaling protocols that allow applications to communicate directly with the ATM network to prioritize traffic. The protocols are being released to universities for testing, he said.

Stop, thief!

In addition, AT&T Labs is working on technology to secure intellectual property, such as software, music and documents, that is sold across networks, said Sandy Fraser, vice president of research at the labs.

AT&T is considering at least two schemes to protect digital property. One is digital watermarking, whereby the content owner peppers the original content with indiscernible codes that uniquely identify each user, according to Matthew Blaze, principal research scientist in AT&T's secure systems research laboratory. That way, should unlawful copies show up, the perpetrator can be tracked.

Watermarking can also be administered so that users would destroy huge chunks of content if they tried to remove the codes in order to copy and distribute the content, he said.

Another technique is the use of tamper-resistant hardware, whereby content is cryptographically protected — or scrambled — if the user does not have a license to download the digital information. This is similar to the way cable companies scramble premium channels today. The tamper-resistant hardware could run on smart cards, or on coprocessor chips or boards. Eventually, chip makers might want to bundle the technology into their products, Blaze said.

Dave Maher, head of AT&T Labs' secure systems research department, said the labs is also developing a form of electronic cash for transferring funds over the Internet. It will take a form "like a smart card" and will be announced soon, he said. ■

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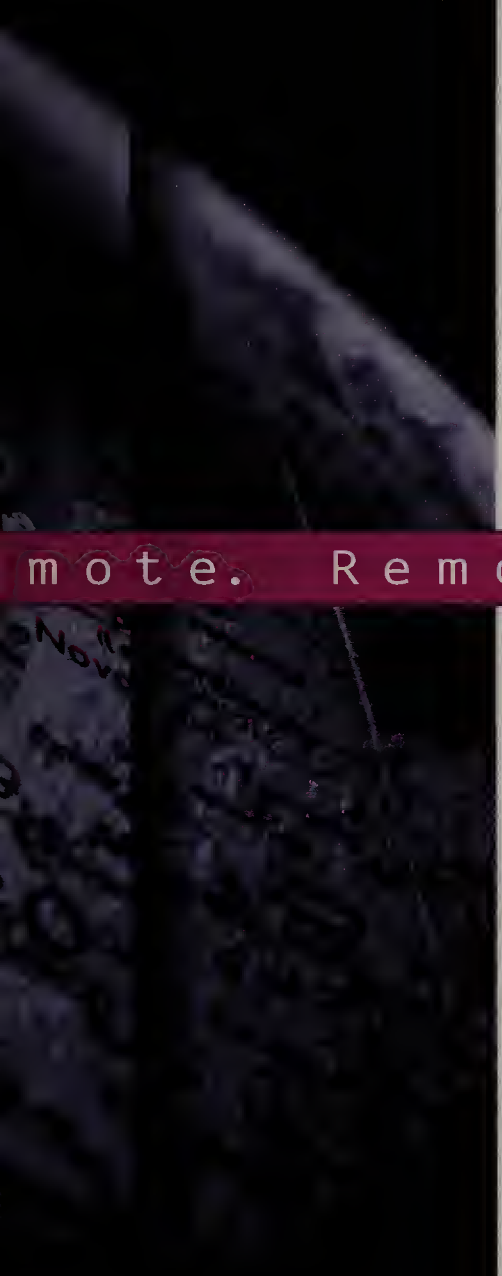

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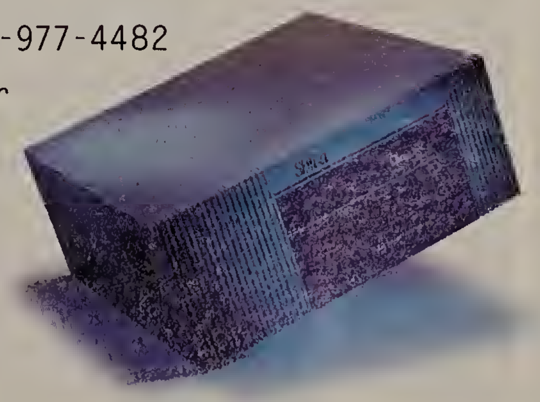

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Portable modem choices are expanding

3Com, Motorola step up to the plate to give users more options with new PC Card Type III devices.

By Joanie Wexler

Mobile users are getting more choices in modem equipment.

3Com Corp. and Motorola, Inc. are both launching new PC Card Type III devices. 3Com's newly formed mobile products group last week introduced a fine-tuned version of its LAN+ 28.8 Modem PC Card — a 28.8K bit/sec V.34 modem that also serves as an Ethernet adapter for laptops. Motorola plans to announce today a new Type III card for the ARDIS Co. wireless network targeted at vertical markets.

3Com's new card, retailing for $519, has the ability to add a cellular connection by plugging in a $139 cable that connects the user's laptop with a cellular phone, said Rich Redelfs, director of marketing in 3Com's mobile products division. The cellular portion supports the MNP-10 error-checking protocol.

The enhanced version also adds support for coaxial cable (for an extra $50) to the twisted pair already supported as well as expert system called Auto IQ to help users with installation.

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Users running any version of Windows or DOS can operate their Ethernet connections and modem at the same time; OS/2 users can run one session at a time. There is no support yet for Apple Computer, Inc. portable computer users.

One reason users might want to upgrade their PC Card modems to 28.8K bit/sec is that enterprise network managers and Internet service providers (ISP) have installed high-performance modem pools to answer data calls.

But this performance potential is wasted if the end user's modem does not match the speed on the receiving end, Redelfs pointed out.

According to 3Com, independent performance testing has shown that its modems will connect users at the modem's full 28.8K bit/sec speed over 88% of the North American telephone network.

Redelfs said, though, that 3Com has not done much throughput testing of the cellular capability and would make no performance guarantees about it.

At the opposite end of the sales spectrum, Motorola will sell its Series 500 Integrated Wireless Modem to handheld and laptop computer makers that cater to vertical markets.

Those vendors will, in turn, bundle the modems into their devices.

The Motorola Series 500 modems, which represent an upgrade to its Series 400 devices, will enable portable terminals, telemetry systems and mobile positioning systems to communicate in real time with databases, dispatch systems and security systems over the ARDIS packet data network. ARDIS runs at 8K and 19.2K bit/sec.

The products' Series 400 forerunners were not in PC Card format, and terminal makers were looking for standard-size modems that were smaller to bring the size of their devices down and to allow them to mix and match devices, said Bob Cieslak, director of Motorola's wireless data group.

Cieslak said the modems, which run about $300 for OEMs compared to $400 for the former product, use 50% less power than the previous devices.

That, plus the reduced cost, should open up new markets for wireless data, he said. ■

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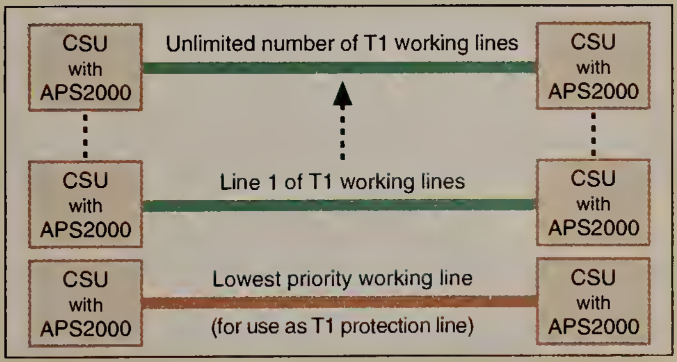
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NETWORK MANAGEMENT

Distributed mgmt. still elusive goal

Platforms starting to appear but where are the apps? And what's this Web stuff anyway?

By Jim Duffy

It seems like the modus operandi in the computer industry: When a speedy new microprocessor appears, software capable of taking advantage of it is months behind.

It is a similiar story with network management. Now that distributed management platforms are finally hitting the market, the applications to harness them are hard to find.

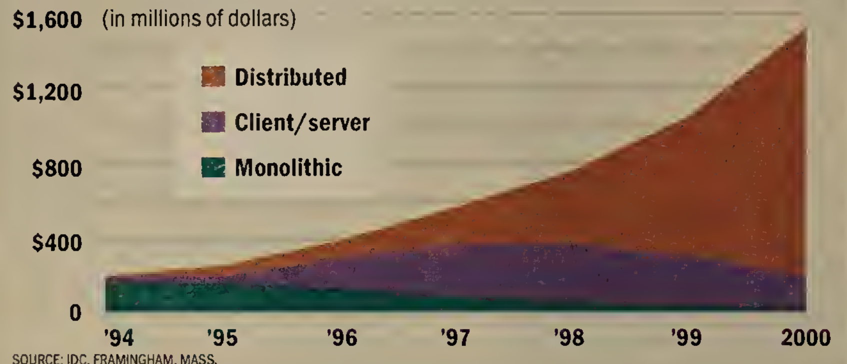
But lack of distributed management applications is not the only issue. Vendors of distributed management platforms have to hash out the impact of the World-Wide Web on their business. Increasingly, the Web and Web technologies are viewed by users as the new integration point for management applications, a role initially intended for, but beyond the scope of, platforms.

So the march to distributed management drags on.

"Overall, we're still a long way" from distributed management, said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo. "It's going to require the people building applications to actually engineer their application to take advantage of those services. So we're still in a pretty primitive state."

Worldwide management platform sales by product class

The market for distributed management platforms will approach $1.5 billion by the turn of the century, far outpacing sales of monolithic and client/server platforms, which will decline.



SOURCE: IDC, FRAMINGHAM, MASS.

Management platform market leader Hewlett-Packard Co. started shipping the distributed version of its OpenView system — Network Node Manager (NMM) 4.1 — in April. But key applications for it are lagging behind.

Seagate Enterprise Management Software, Inc. only started shipping a version of its NerveCenter event correlation engine for NNM 4.1 two weeks ago. But Bay Networks, Inc. will not ship a version of its Optivity network management application for NNM 4.1 until October. That is about the time Cisco Systems, Inc. will be shipping CiscoWorks for NNM 4.1.

Cabletron Systems, Inc.'s Spectrum platform consistently wins glowing praise for its sophistication and distributed capabilities.

But the company only began coveting systems management application vendors 11 months ago, so it is not as far along as HP and IBM, who have been at it for years (*NW*, Aug. 28, 1995, page 22).

"Some customers are saying, 'We have a distributed platform but that really doesn't help because our applications don't support it yet,'" said Brian Burba, an analyst at International Data Corp. in Framingham, Mass.

"That's going to limit the deployment of these products until the applications can really take advantage of that," he added.

But the value proposition of writing applications to these platforms may be lost on software developers. They see the platforms as little more than glorified application launchers, according to Ravi Gulati, president of StonyBrook Software, a Bohemia, N.Y., OEM supplier of router management software.

"That platform thing is dead," Gulati said. "The platform business is a money losing proposition for everybody. There is no integration and not likely to be in the next few years."

As platform vendors scramble to bring applications onto their new distributed managers, they're looking over their shoulder at the oncoming Web. Users like the Web for network management because it provides a portable, inexpensive interface on which to distribute management reports (*NW*, May 13, page 1).

Vendors do not like the Web because users will no longer shell out tens of thousands of dollars to purchase a management platform on which to host those reports (*NW*, July 1, page 1). But the vendors sense its inevitability, because they have banded together to standardize Web technology for network management (*NW*, July 22, page 1).

In forming their Web-Based Enterprise Management (WBEM) initiative, application vendors said platforms and other management tools are still point products that offer little of the promised application integration they were supposed to deliver.

"The device vendors all feel that it's kind of inevitable, that you'll have Web servers in devices and some form of Java [management] applet," said Jill Huntington-Lee, manager of new business development at SNMP Research, Inc. in Knoxville, Tenn.

Platform vendors say WBEM could change the fundamentals of their business.

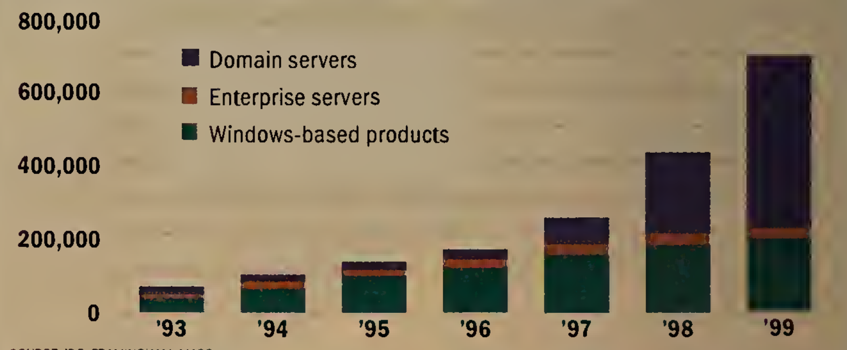
"It might offer [device vendors] the capability of building management applications that wouldn't have to sit on top of two or three different network management platforms," said Chris Grafft, senior vice president of business development at IBM's Tivoli Systems, Inc. subsidiary. "But [WBEM] protocols don't have the capability of distributing large amounts of data to multiple end points, and that's pretty much where the frameworks come in today."

HP argues that WBEM will actually enhance OpenView by enabling the company to focus on developing "value-added services" for the platform, according to Andy Vanagunas, HP OpenView program manager. Such services would include information consolidation, event handling, topology enhancements, charting relationships between managed objects, adding inference engines and developing a repository of management information, he said.

One piece of the distributed management equation — and probably the most important — that standards bodies refuse to touch is intelligent agent technology.

Worldwide management platform shipments by segment

Shipments of distributed domain servers will far surpass shipments of enterprise servers and Windows systems and will be the predominant implementation of enterprise network management.



SOURCE: IDC, FRAMINGHAM, MASS.

Lack of standard intelligent agent architectures may be what is holding up this Holy Grail of standards-based distributed management.

"The limitations I see are not so much in intelligent agent technology itself but more in standardizing the technology. . .[and] the overall issues of integrating intelligence within an SNMP architecture," said Frank Henderson, chief technology officer at The Netplex Group, Inc. in McLean, Va. ■

3M not waiting for distributed apps

Users aren't waiting for applications to come up to speed or the Web to level the playing field. They're implementing distributed management now.

3M Corp. is one such user. The company is deploying Hewlett-Packard Co.'s OpenView Network Node Manager (NNM) 4.1 to set up a redundant management environment in which dual management stations can back up distributed collection stations. The collection stations discover and poll devices in 3M's metropolitan and wide-area networks.

3M's U.S. network consists of 25,000 nodes, 150 routers, and hundreds of hubs and terminal servers. Prior to installing NNM 4.1, 3M managed its network with Version 3.X of NNM, said Chris Amley, lead network management analyst at the company.

But the monolithic 3.X version was memory intensive, a bandwidth hog and discovered more devices than 3M wanted to know about, Amley said.

But migrating from a monolithic structure such as NNM 3.X to a distributed one demands a new way of thinking about management, Amley said, such as determining where to place collection stations and what their configuration should be.

"We're still not sure what is the adequate memory and disk configuration for the collection stations," Amley said.

3M has also been bitten by the application bug with the distributed NNM 4.1. The company cannot use a key transient submap feature of NNM 4.1 because third-party applications cannot take advantage of it. That means 3M has to store all of its NNM submaps in main memory, which requires using more memory than NNM 4.1 should. It also means 3M should not toss out NNM 3.X just yet.

"The applications that we have are not officially supported on [NNM] 4.1," Amley said. "We're happy with the way they're working now, but we're hedging our bet by having a [NNM] 3.3 system in the background."

—Jim Duffy

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☐ Finance/Banking
☐ Telecommunications
☐ Aerospace
☐ Government
☐ Wholesale/Retail (non-computer)
☐ Insurance
☐ Legal
☐ Healthcare
☐ Internet Services
☐ Education
☐ Advertising/Marketing
☐ Public Relations
☐ Software Development
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☐ Mining/Construction/ Agriculture
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☐ Business Services
☐ Library
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☐ Other______________

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☐ Scientific
☐ Engineering
☐ Programming/Systems
☐ Educator
☐ Network Operations
☐ Product Management
☐ Press/Editorial
☐ Application Development
☐ Corporate Training
☐ Human Resources
☐ Internet /Web Professional

WHAT IS YOUR TITLE? (Check Only One)
☐ CEO/COO/President/Owner
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☐ Senior Vice President/Vice President
☐ Director
☐ Manager
☐ Administrator
☐ Analyst
☐ Staff
☐ Other______________

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☐ 50 - 99
☐ 100-499
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☐ 1000-4999
☐ 5000-9999
☐ Over 10,000

WHAT IS YOUR PRODUCT/SERVICE INTEREST?
☐ Web Server Hardware
☐ Web Browsers
☐ HTML Authoring Tools
☐ VRML Authoring Tools
☐ Web Publishing Tools
☐ Search Tool Engines
☐ Encryption Software
☐ Firewall Security
☐ Transaction Processing
☐ Modems
☐ T1/T3 Multiplexers
☐ E Mail Software
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☐ Communications / Remote Access Software
☐ Bulletin Board System Software
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☐ Networking Hardware
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☐ Yes ☐ No

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DOES YOUR COMPANY UTILIZE ANY FORM OF INTERNET COMMERCE?
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DO YOU INTEND TO PURCHASE AN ENTERPRISE INTERNET PRODUCT OR SERVICE IN THE NEXT 12 MONTHS?
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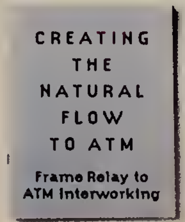
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Briefs

MCI Communications Corp. *last week said it has filed a tariff to provide* **competitive commercial local phone service** *via its own facilities in the Cleveland business district, which falls in Ameritech Corp. territory. While the Public Utilities Commission of Ohio still must approve the tariff, the commission has approved MCI to offer local service to every telephone customer in the Cleveland metropolitan area, the carrier said. MCI said it intends to provide local services to others beyond the reach of its network when it finalizes an agreement with Ameritech for the resale of local service. Cleveland marks the 11th U.S. city in which MCI offers local service.*

Interprise Networking Services, *the integration arm of US WEST, Inc., has partnered with ConferTech International, Inc. to offer ConferTech's* **conferencing services.** *ConferTech's platform will allow Interprise to deliver integrated billing that will itemize all conference usage and costs within the client's standard phone bill. Interprise will also use ConferTech's Sonata bridge technology, which integrates and automates conference operations, reservations, scheduling and administration.*

FaxSav, Inc. *last week said it has established an Internet fax point of presence in Hong Kong to serve customers in the* **Pacific Rim.** *FaxSav, which runs a worldwide dedicated fax network to help companies save money on their fax bills, announced in May that it was hooking to the 'Net as an access alternative, especially to help users avoid pricey international access charges from foreign carriers.*

WorldCom International, *an affiliate of LDDS WorldCom, has signed a Network-to-Network Interface agreement with Telecomunicaciones de Mexico to extend frame relay services to various* **Mexican cities.**

Scitor sets sights on American mart

International carrier to offer frame relay among U.S. sites in September, ATM next year.

By Joanie Wexler
Atlanta

A carrier long known for its global reach will soon be bringing domestic data services to U.S. companies.

Scitor Corp. will offer domestic frame relay service starting in late September.

This will be followed by Internet access later in the year and Asynchronous Transfer Mode in 1997. The carrier, which runs a centrally managed data network spanning 220 countries, has until now commercially offered U.S. customers links to other nations. It has not offered connectivity within U.S. borders.

However, the recent extension of an outsourcing contract between Scitor's sibling company, SITA, and the American Airlines Sabre network to include domestic traffic will make commercial U.S. offerings viable, said Scitor President Didier Delepine.

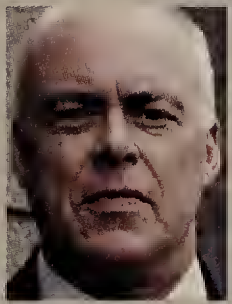
Scitor intends to use the SITA net, which boasts 150 U.S. points of presence, to offer X.25, frame relay and ATM services, he said.

Scitor will offer dedicated frame relay access options only, and access speeds will range from 56K bit/sec to T-1. Options for the committed information rate — the guaranteed minimum amount of bandwidth available through the long-distance part of the switched frame relay network — will range from 8K to 1,024K bit/sec, Delepine said.

Late this year, Scitor will resell BBN Planet Internet services, including access and Web site management, Delepine added. Scitor became BBN's international partner in March to help BBN broaden its Internet reach.

Scitor has not yet devised a pricing model for its U.S. services. But its success in the U.S. frame relay market will depend largely on cost, users said. Anixter, Inc., a worldwide network integration firm in Skokie, Ill., said Scitor will have to beat the deal AT&T is giving the company in North America to earn its business here.

“We will certainly give them an opportunity [to bid] in the U.S.,” as Scitor's U.S. presence brings the carrier closer to the one-stop-shop situation Anixter is seeking, said Ken Braun, Anixter's director of telecommunications.



According to Didier Delepine, Scitor president, his company's strategy is to penetrate five to eight countries with domestic services. Next up: France, Germany, Japan, the Netherlands and the U.K.

But “frame relay is a commodity service in this country, so price is the driving factor,” he said.

“Scitor will be effective where domestic customers have a large portion of international traffic” because it has a denser infrastructure in other countries, said Val Sribar, a service director at META Group, Inc., a consulting firm in Reston, Va.

Braun said that in his view, a single vendor offering worldwide services via its own staff has better control over the network than, say, a consortium or partnership of companies.

Tim Burke, data communications analyst at The Yankee Group, a Boston consulting firm, agreed with Braun that “alliances make it harder to troubleshoot networks” because they are owned by different partners.

Scitor's domestic network will be managed centrally from a network operations center here.

✆Scitor: (770) 612-4700.

Local competition

Trivial disputes delay interconnection agreements

By David Rohde
Washington, D.C.

Someday, AT&T and Bell Atlantic Corp. may be fighting over who offers the best local telecommunications services. But at the moment, they are wrapped up in “critical” issues such as what logo repair technicians should be wearing when they come to fix your phone line.

Bell Atlantic earlier this month ridiculed an AT&T demand that Bell Atlantic repair technicians patch AT&T logos onto their shirts whenever they are working on a line for a user who has dropped the regional Bell operating company in favor of the long-distance giant's new local service.

TELECOM IN TRANSITION

The patch dispute is yet one more issue that is delaying an interconnection agreement between AT&T and each of the RBOCs.

Also earlier this month, AT&T asked state regulators in most of Bell Atlantic's territory to arbitrate an interconnection agreement between the two companies, which is AT&T's right under the Telecommunications Act of 1996.

Although AT&T has not signed any interconnection agreements, other potential local exchange competitors continue to come to terms with RBOCs.

Most notably, MFS Communications Co. recently signed an interconnection agreement with RBOC SBC Communications, Inc. The agreement covers Texas and Missouri.

These latest moves reflect a continuing gap between the demands of AT&T — which is expected to enter the local market by reselling RBOC capacity — and facilities-based carriers such as MFS that have their own local networks in place (*NW*, June 17, page 1).

And the RBOCs have made headway in eliminating one of AT&T's wish list items from the Federal Communications Commission's massive proposal setting mandatory interconnection rules, due to be voted on early next month. If passed, the provision would bar RBOCs from including access charges in the fee for network elements sold to new competitors, such as AT&T, that have not built their own local networks and need to buy at least part of it from an RBOC.

House Judiciary Committee Chairman Henry Hyde (R-Ill.) wrote FCC Chairman Reed Hundt telling him such a proposal violated congressional intent.

Hyde told Hundt to wait for a separate FCC proceeding due this fall before changing the way RBOCs charge for access — the average 3 to 4 cents per minute on either end that local carriers charge long-distance carriers for completing connections.

During the past several weeks, RBOCs have complained to members of Congress about what will happen if they lose billions of dollars in access revenue.

For example, BellSouth Corp. recently said local carriers as a whole could lose $6 billion to $10 billion in revenue, threatening RBOC stock values and forcing local phone rates to skyrocket.

AT&T's chief lobbyist Gerry Salemme scoffed at the RBOCs' charges. Under the original FCC proposal, RBOCs would only lose access charges for those customers who switch local service to AT&T or another new competitor, he said.

And new competitors will not be able to snag many customers right off the bat, Salemme said.

He explained that RBOCs are unprepared to accept electronic messages from AT&T that indicate which customers are switching to AT&T's local service, and instead are proposing cumbersome methods such as fax. ■

Trimmed AT&T does an end run around CPE

By David Rohde
Basking Ridge, N.J.

AT&T's spinoff of Lucent Technologies, Inc. is proving to be a liberating factor for its 800 services marketing effort.

No longer worried about duplicating functions that can be performed by Lucent's call center customer premises equipment, AT&T is rapidly introducing new ways to complete consumer transactions in the carrier network without touching a piece of CPE.

The carrier recently introduced four new call center transaction services housed in the AT&T network, three of which remove the need for a user's private branch exchange or automatic call distributor (ACD) to process the call.

The new services build on AT&T's introduction last year of Order Express, a service that uses a network-based interactive voice response (IVR) system to let callers order catalog products with immediate validation of credit card numbers (*NW*, July 10, 1995, page 31).

Now AT&T has extended the same capability to companies whose orders are processed through registration and warranty forms (see graphic).

The moves, revealed to 800 service users at last month's AT&T Business Solutions Forum in Orlando but not publicly announced, are part of AT&T's broad-based shift away from pure transport and toward application selling (*NW*, July 22, page 1). But since they relieve corporate network managers of the need for on-premises voice switching, the new call center transaction services are also driven by the Lucent divestiture.

Sheila McGee-Smith, a call center analyst for The Pelorus Group in Raritan, N.J., said AT&T could not put much emphasis behind Order Express last year because it still had a CPE business centered around what is now Lucent's Definity line of PBXs and ACDs.

In one of the new applications, Order Express Fax, AT&T uses optical character recognition to turn the faxed material into a data file that is transmitted to the catalog's fulfillment house as shipping instructions, explained Jody Wacker, AT&T's national call center marketing director.

The carrier is also upgrading an administration tool known as Telemarketing Operations Performance Management System (TOPMS), which collects agent-status data from ACDs and forwards it to the AT&T network so calls can be efficiently delivered to multiple call centers under rapidly changing conditions.

When it is reintroduced as Call Center Transaction Manager (CCTM), it will contain a new Windows 95 interface to replace TOPMS' Unix interface, Wacker said. CCTM will also provide the basis for AT&T's Intelligent Call Processing (ICP) network-based call-routing system, which actually examines each agent's status and skills on a call-by-call basis before picking an agent to take the call.

AT&T officials concede that call center administrators have been slow to pick up on ICP because it involves a per-call additional charge. But in the future, AT&T will offer a shared ICP service, allowing several companies to share the required database in the carrier's network, Wacker said. ■

The carrier does it for you

New transaction services housed in AT&T's carrier network:

Service	Description
Order Express Fax	Uses optical character recognition to accept faxed customer orders and to do credit card verification.
Registration Express	Automates registration forms, such as for conferences, through interactive voice response (IVR) and fax.
Authorized Access Enhanced	Upgrades existing IVR application for warranty orders to include credit card verification.
Transfer Connect Cross Selling Application	Transfers 800 calls to another company while retaining customer database information.

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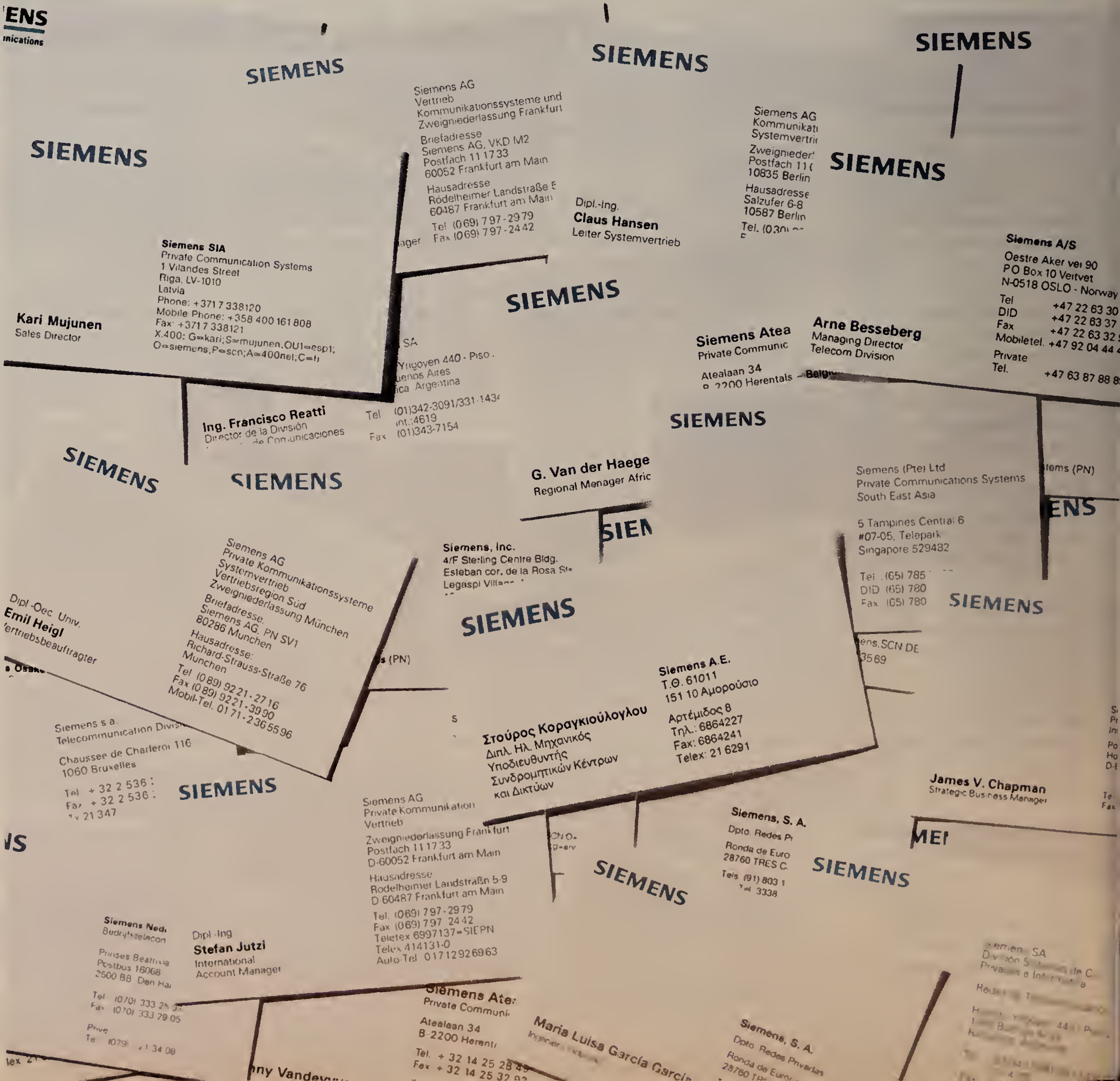

WAN MONITOR

Coordinating an office relocation

We finally outgrew our small Tulsa, Okla., office and had to find bigger space. Since many of TeleChoice's data consultants work out of our office, coordinating a single 56K bit/sec local loop for our frame relay connection and a few phone lines should have posed no problems.

The fun began a week early when the inside wiring contractor came to run connections for the LAN and phones. Within the first hour, the phones of the business next to ours were down, the wires having been mistakenly cut by the contractor. Their lines, we later discovered, were terminated in our wiring closet and were not marked. It only cost our neighbor four hours of downtime (@$%*!).

The local exchange carrier (LEC) data installer arrived sometime in the middle of all the chaos to install and test the 56K bit/sec local loop for our frame relay network. Graciously, he said he would move our neighbor's lines out of our space completely so no more mishaps could occur.

Once finished, he turned his attention to the data line, and we clearly established that under no circumstances was the network to be cut over until the scheduled data switch, which was still a week away.

Imagine our surprise three hours later when a representative from SBC Communications, Inc. called to verify that we had released the circuit early and the cutover would occur within hours.

AARRRGGGHHHH!!!!!

On moving day, the comedy of errors began in earnest. Close to noon, the SBC representative showed up and announced that none of the four phone lines would be installed because of a facility shortage, and there was only room for two lines. Half an hour later, this guy was persuaded to put in the first two lines and come back later to do the other two.

Meanwhile, the wiring contractor inadvertently cut the neighbor's phone lines again, since they had not been removed from our closet as we were told. After two hours of snide but insulting comments from the contractor, the LEC data guy spitefully terminated the 56K bit/sec loop on a panel rather than on a simple plug and disappeared.

A second LEC person arrived and announced that he has come to install four phone lines. Patiently, we explained that two have already been installed, and that apparently there is a facility shortage that prevents the installation of the last two lines. He scratched his head and left the room.

Daniel Briere and Christine Heckart

At 4:45 p.m., a third LEC person wandered in to install all four lines, went outside to look at the wiring, bumped into LEC guys Nos. 3 through 5 all scratching their heads trying to figure out what needed to be terminated where.

The data network came up briefly, and then came back down. Then came the weekend. The LEC agreed to dispatch a tech to fix the phone problem, and after several hours all four lines were operational. Data network was still down.

On Monday, phone guy No. 8 or 9 (I lost track after 5) came early, ready to help. By 10 a.m. the problem was resolved, the network was up, the phones were up, and it was business as usual.

Twice since the move, phone trucks have been seen in the parking lot, and we watched them closely, hoping our data network and the neighbor's phones didn't mysteriously go down.

Briere is president and Heckart is director of broadband with TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.

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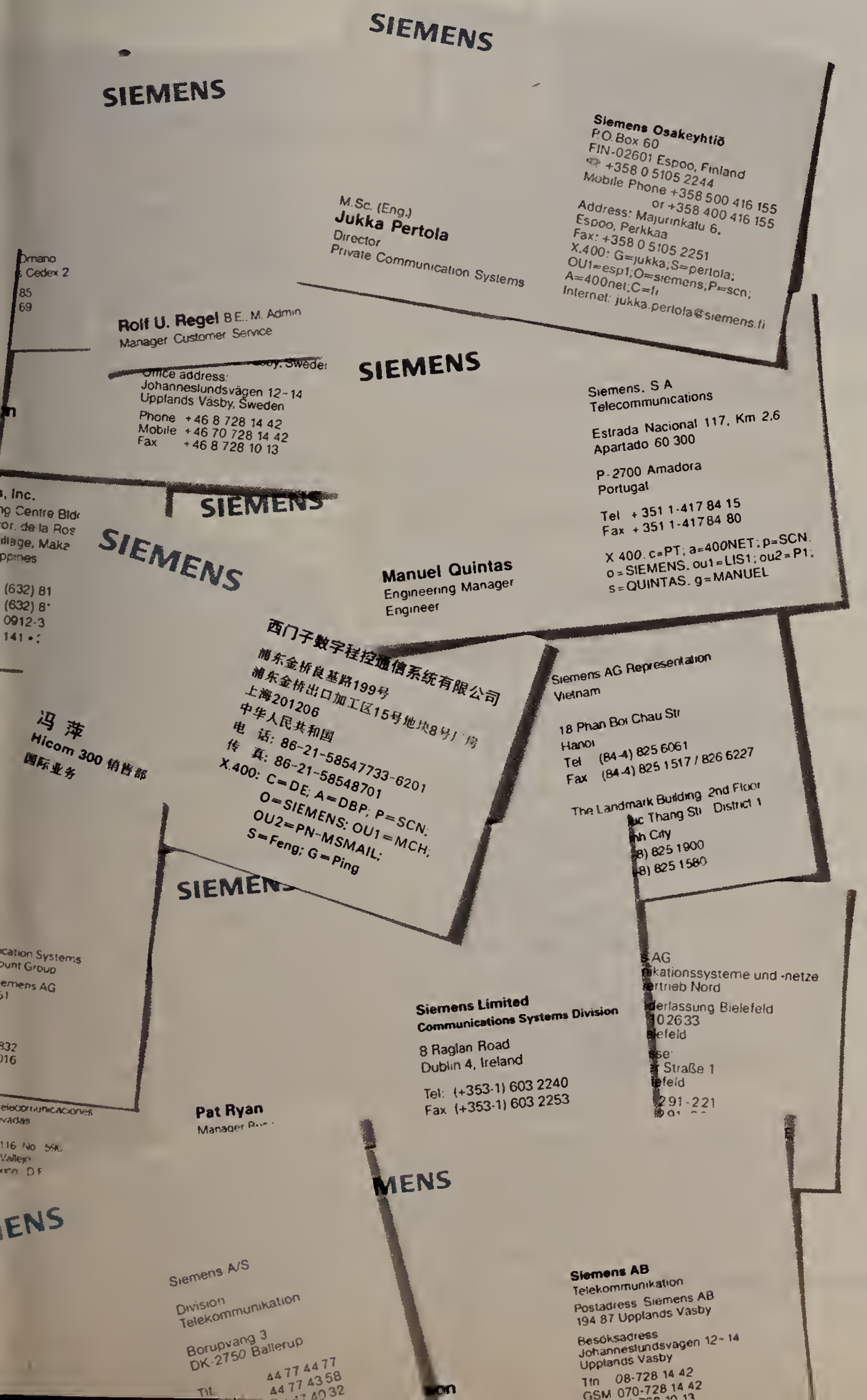

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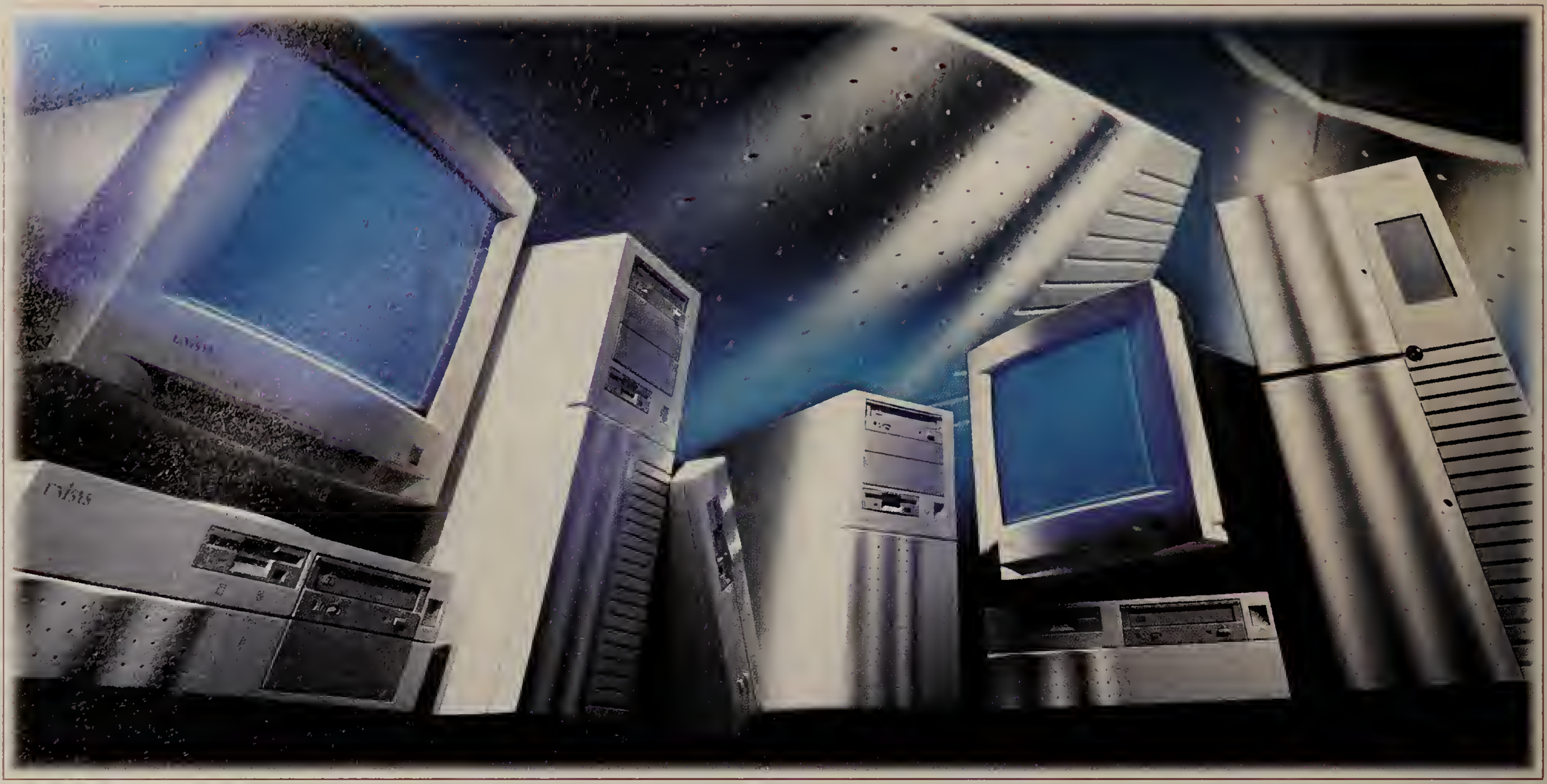

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UNISYS

The Information Management Company

Local Networks

Covering: Operating systems • LAN management
Hubs • Switches • Adapters and other equipment

Briefs

Octopus Technologies, Inc. *is revving up the Automatic Switch Over (ASO) component of its* **Windows NT** *server data protection software. The ASO software in the current version of Octopus for Windows NT runs on two or more NT 3.51 servers, allowing any server to maintain the data and applications of another should it fail.*

OCTOPUS
BEFORE DISASTER STRIKES

Location:	Yardley, Pa.
Founded:	1992
CEO:	David Crocker
Primary Products:	Octopus Server and ASO for Windows NT Server; Octopus WinStation for Windows 95/Windows NT Workstation
Web site:	www.octopustech.com

The new Super ASO (SASO) software, running on two or more Windows NT 4.0 servers, enables a server to assume the responsibilities of the failed server and maintain all its own legacy applications. SASO, to be sold as an add-on to Octopus for Windows NT, will ship later this summer. Pricing has not been set.

Octopus: (800) 919-1009.

Computer Knacks, Inc. *of Shrewsbury, N.J., this week will ship a revision of its menuing system software that is designed to help companies manage Windows clients within a NetWare 4.X network. The main feature of* **Habitat 3.0 for Novell Directory Services** *is tighter integration with NDS. This version lets an administrator utilize NDS objects — currently used to give groups of Windows clients rights to networked applications — to make icons of those applications available to groups of users on their desktop machines.*

Habitat 3.0 for NDS pricing will range from $395 for a 25-user license to $3,495 for a 1,000-user license.

Computer Knacks: (800) 551-1433.

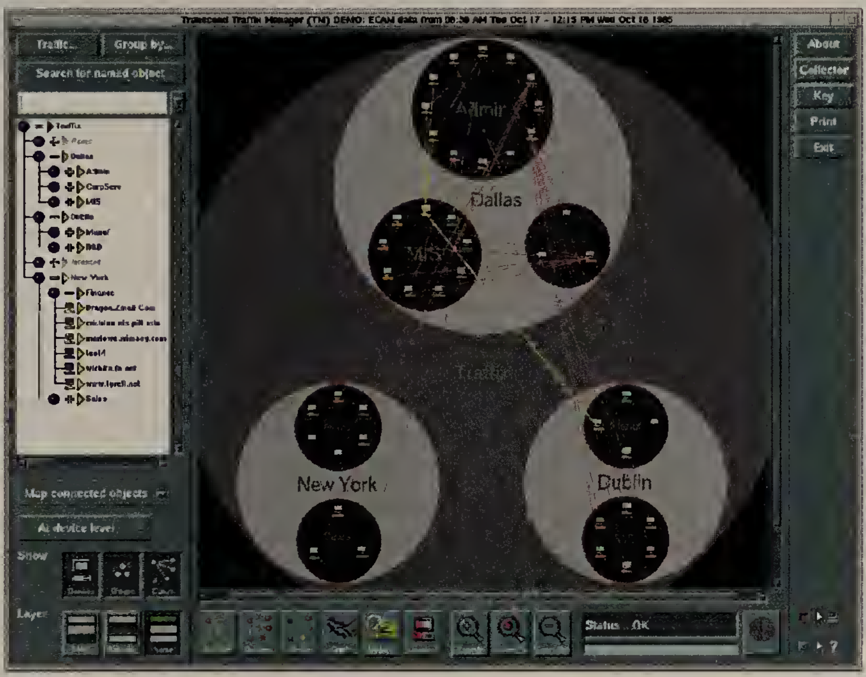
3Com tries to move ahead in RMON race

New software and hardware part of overall distributed RMON plan, reducing central management station's workload.

By Jodi Cohen
Santa Clara, Calif.

3Com Corp. last week rolled out new Remote Monitoring tools for managing mixed shared and switched networks.

The products are part of 3Com's overall distributed RMON (dRMON) strategy, which allows users to spread RMON collection devices across the network that feed information to one or more management consoles. This approach, which involves deploying different levels of RMON across the net, reduces the central management station's workload.



The Transcend Traffix Manager *gives net managers an RMON2-based display of network protocol and application traffic for performance management, trend analysis and troubleshooting.*

Get more Info on Network World Fusion, including:
- RMON2 primers
- A 3Com white paper on RMON2
- Articles on RMON efforts by other vendors

From the main menu select News+.
NetworkWorld Fusion
http://www.nwfusion.com

3Com's new offerings include RMON and RMON2 applications and probes, including technology recently obtained via its Axon Networks, Inc. acquisition.

On the software side, 3Com rolled out the Transcend Traffix Manager RMON2 application, which consolidates data collected by probes on the net. The network manager can view traffic for a particular workgroup, virtual LAN, subnet or organization, and tune the network based on real usage patterns.

3Com also unveiled the Transcend LANsentry application, client software based on the original RMON technology that enables net managers to view traffic and statistics on remote LAN segments.

In addition to management applications, 3Com introduced data collection hardware and software to help simplify network management. The Transcend Enterprise Monitor Series 500 RMON/RMON2 probes allow net managers to collect traffic statistics, capture data, set alarms and examine packets on remote segments from a central net management platform. The probes capture data locally and feed it to a central console, rather than having the central system constantly fetching data itself. 3Com has also made its RMON/RMON2 probe software for its SuperStack II stackable hubs and switches available for token-ring and Fast Ethernet nets. Previously, the software worked with just Ethernet and FDDI modules.

Another feature that sets 3Com's management products apart from its competitors' offerings is that they let net managers view the network in terms of application and network resource usage rather than as individual devices, according to industry observers.

Pricing for the Traffix Manager is $7,995; the application will be available in August. The Transcend LANsentry application is priced at $4,495 and will ship in September. Pricing for the Transcend Enterprise Monitor Series 500 probes, which are available now, starts at $3,295.

☎3Com: (408) 764-5000.

Operating systems

Feeling pressure from NT, HP chomps at 64-bit Unix

By Ben Heskett
Palo Alto, Calif.

Last week, another Unix stalwart trotted out a 64-bit operating system road map. Like the others, the Hewlett-Packard Co. plan is designed to give customers performance increases without leaving 32-bit applications behind.

HP's new product will join SunSoft, Inc.'s Solaris and the Santa Cruz Operation, Inc.'s (SCO) UnixWare in providing customers with 64-bit functionality next year.

Sixty-four-bit operating systems promise to support larger chunks of data in memory, create larger files and work with a larger number of files — all at faster speeds than 32-bit operating systems.

The drive to 64 bits comes as the Unix world is feeling increasing pressure from Windows NT in the enterprise.

The main component of HP's strategy is based on its alliance with SCO and the modular 64-bit 3D architecture (3DA) the two companies are developing. That development is intended to offer customers a large-volume Unix operating system with a dominant market share and heavy independent software vendor (ISV) support.

Previous attempts to standardize Unix have not ended the splintering of the operating system and the many flavors of it that ISVs have had to support. And confusion still reigns.

"Both SCO and HP claim to be the lead in this dance. The question could be asked: Who is really doing the work?" wondered Dan Kusnetsky, an analyst with International Data Corp., a Framingham, Mass.-based consultancy.

By 1998, a combined modular code base of 3DA will serve as the architecture for separate operating systems to be offered by HP and SCO, according to company officials. That combined code base should offer customers about 30,000 applications, estimated David Scott, a product marketing manager for HP.

The HP-UX road map

AUGUST 1996
Version 10.20
- Supports large files
- Coincides with introduction of PA-8000 processor-based systems

MID-1997
Version 11.0
- Becomes a full 64-bit operating system
- Includes APIs for combined SCO and HP Unix, code-named 3DA
- Runs on PA-8200 systems

1998 AND BEYOND
Version 11.X
- Runs on PA-8500 systems
- Coincides with introduction of Intel Merced chip

The HP-UX strategy also addresses the merging of PA-RISC technology and Intel technology in the 64-bit Merced chip.

Digital Equipment Corp. and Silicon Graphics, Inc. have already taken their brands of Unix to 64 bits. ■

IBM leans on Xylan for LAN switching gear

By Jodi Cohen

Research Triangle Park, N.C.

Unable to fulfill growing customer demand for campus switches with its own products, IBM last week announced the signing of a five-year resale and joint development deal with Xylan Corp.

As expected, IBM and Xylan agreed to sell and manufacture each other's campus switching devices as well as jointly develop new switches. The deal marks IBM's ninth major partnership or acquisition involving a network company in the past year (*NW*, July 15, page 1).

The alliance gives IBM access to Xylan's PizzaSwitch workgroup device and its big brother, the OmniSwitch.

At the same time, Xylan bolsters its product line with IBM's 8272 token-ring workgroup switch, 8271 Ethernet switch, 8275 Asynchronous Transfer Mode workgroup switch, 8260 multiprotocol switching hub and ATM adapter cards.

Also under the agreement, IBM will order $30 million of Xylan products to be delivered over the next eight months and can purchase up to 5% of Xylan's total outstanding stock.

The deal is much more than a resale agreement, said Rick McGee, vice president of strategy and business development for IBM's networking hardware division.

IBM's *McGee says the IBM/Xylan pairing will be a long-term relationship.*

"IBM [has not] given up its role as a creator of technology in campus switching," he said. "Instead, this is a long-term relationship under which each company will make use of key LAN technologies developed by the other."

Analysts agreed.

"This gives IBM a high-end solution that they've been lacking, while giving Xylan the ability to compete head-on with enterprise players like Cisco, Bay and Cabletron," according to Esmerelda Silva, an analyst at International Data Corp., a market research firm in Framingham, Mass.

New product development will include a token-ring LAN emulation client in the OmniSwitch, which will make it easier for token-ring users to access ATM-attached devices.

The OmniSwitch will also gain source route transparent bridging. ■

WIRED WINDOWS

Waking up to the importance of directories

The network industry has awakened to the significance of directory services this summer. Highlights include the one-year anniversary of Microsoft Corp.'s Open Directory Services Interface (ODSI); Novell, Inc.'s road map for delivering Novell Directory Services (NDS) on Windows NT; and announcements of support for the Lightweight Directory Access Protocol (LDAP) by IBM, Novell and others.

What does it all mean?

About the best that can be said for ODSI is that it appears to have galvanized the rest of the network community around LDAP, which was until recently a little-known technology. Pushed by Netscape Communications Corp. — but with lots of support from Novell, IBM and others — LDAP should be incorporated into many applications and operating systems by the end of 1997.

Dave Kearns

LDAP will provide a means for a software developer to build directory queries and even directory management into any application.

Microsoft announced relatively lukewarm support for LDAP, preferring to roll it into its more grandiose ODSI strategy. The Redmond, Wash., company had been hoping that ODSI would give Windows NT an entry into the NetWare 4 NDS world by encouraging third parties to develop applications tying NetWare users into NT. ODSI has a design similar to the Messaging Application Programming Interface in that there are two classes of functions — one for clients and one for so-called service providers.

Without a service provider for a directory system, a client cannot access it. At the first anniversary party for the ODSI announcement, Microsoft was not able to name a single non-Microsoft vendor that had even announced the possibility of developing a service provider. ODSI would appear to be dead and awaiting burial, unless it's resurrected as a Microsoft-only implementation of LDAP.

The other hot directory services topic of late has become meta directories. One young company, Zoomit International, Inc., has garnered attention of late by talking up this technology and announcing plans to launch a product later this year. The company's premise is that the various directory systems — NOS, messaging, etc. — all contain different information. A meta directory would gather this disparate information into a rational view of all the directories present on your network.

The meta directory concept is one all applications vendors should be considering. It means they shouldn't attempt to build their own directory, but instead provide a template with fields for the information their applications need. Using LDAP, the information can be viewed or used as needed without having to tie up disk space for a new database or taking up network bandwidth constantly updating that database.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at dkearns@msn.com.

Tip of the week

Storage management – what we used to call backup and recovery – isn't the most glamorous of topics. But Global Business Solutions, an Internet/intranet products and services provider, hopes to make the topic more appealing with its new Web site, which is devoted to all things storage-related (http://www.storagecafe.com/).

NET RESULTS

25M bit/sec ATM: It's something to think about

The vendor hype machines and shrill cry of the trade press have raised the specter of 25M bit/sec ATM as a viable desktop solution in 1996. But customers should consider a handful of issues before rushing headlong into the arms of the network industry's latest savior.

Here's what to examine:

■ **Vendor support.** Before we can strongly recommend the implementation of a new technology, sufficient vendor support and product breadth must be present in the market, as well as a proven track record of use in production-level networks. Currently, 25M bit/sec Asynchronous Transfer Mode falls short in all three areas.

Skip MacAskill and Melinda Le Baron

IBM, ATM, Ltd. and Whitetree, Inc. are the only major players delivering products. Some significant players in the ATM market — most notably market leader Fore Systems, Inc. — have announced or will announce products in this space over the next quarter or two.

■ **Pricing.** Proponents of 25M bit/sec argue that its price points are so attractive that customers will be compelled to evaluate 25M bit/sec ATM. But we've found that price in and of itself is not the overriding factor. Customers need to see the value of adding a new technology to their mix; they need to be able to manage it; and they need to be able to integrate it into their existing network. We would never recommend implementing a technology based solely on price.

■ **Added value.** Instead of focusing on price, customers need to ascertain if 25M bit/sec will add value to their network. In the case of low-speed ATM, the customer must decide if 25M bit/sec offers enough value over dedicated Ethernet or token-ring connections — not to mention Fast Ethernet.

Proponents say yes because of ATM's quality of service feature, but we'd argue that the applications that would require such end-to-end QoS can be accommodated through existing LAN switching methods and some of the emerging Layer 3 switching approaches being championed by Ipsilon Networks, Inc. and Cisco Systems, Inc.

■ **Installed base.** Low-speed ATM proponents argue that 25M bit/sec ATM will attract customers because it can run in ISA-based PCs — the most widely deployed bus type — and run over Category 3 unshielded twisted-pair wiring, which represents the largest installed wiring type.

While there is truth to this technical argument, it is a fairly meaningless one in that customers who fall into those two categories are probably last on the list of potential ATM customers. Customers who require ATM, QoS or a high degree of dynamic bandwidth management are more likely to be running in Category 5 or fiber environments with a high-end workstation and an inclination to embrace 155M bit/sec speeds.

■ **Timing.** Low-speed ATM will become much more attractive to the mainstream market once ATM in general becomes more firmly established as the technology of choice for corporate backbones. The majority of customers will want to get comfortable with the technology in the backbone before introducing it at the desktop and workgroup level.

Based on our projections for ATM adoption on the backbone — it should heat up during the rest of this year and start stealing share from FDDI by late 1997 —we believe 25M bit/sec ATM will fail to capture a significant market presence before 1998.

MacAskill is a senior research analyst and Le Baron is a research director in Gartner Group, Inc.'s Network Computing Infrastructure group. They can be reached at (203) 316-1111 or at inquiry@gartner.com.

Briefs

■ **Lotus Development Corp.** *this week will announce Real Time Notes 2.0, software that lets Notes users participate in* **video and data conferences** *based on Intel Corp.'s ProShare systems. Users participating in video or data conferences may now exploit the Notes corporate name and address book. Available next month, Real Time Notes 2.0 costs $59 per seat.*

Lotus: (617) 577-8500.

■ **VideoServer, Inc.** *in Burlington, Mass., this week will announce two low-end* **videoconferencing servers,** *called Multimedia Conference Servers (MCS), which can handle four to eight conference end points.*

Optional features include support for continuous presence and simultaneous video as well as data and audio conferencing. The Model 2007-4 costs between $22,000 and $28,700, while the Model 2007-8 costs between $42,000 and $48,700.

VideoServer: (617) 229-2000.

■ **PointCast, Inc.** *in Cupertino, Calif., last week announced plans to integrate its products with* **Lotus Development Corp.'s Domino,** *a Web-accessible version of Notes. PointCast sells PointCast Network, a news service that broadcasts information directly to individual computers via the Internet, and PointCast I-Server, a software component that enables the PointCast Network to run on intranets.*

The integration will let companies broadcast personalized news directly to users' computer screens with a Domino-based intranet, combining information from the PointCast Network with internal data from the Notes environment.

PointCast: (408) 253-0894.

Groupware

Novell puts final touches on its GroupWise 5 messaging system

Beta to fix Novell Directory Services conflicts and improve performance.

By Barb Cole
Orem, Utah

Novell, Inc. has begun shipping what could be the final beta version of its GroupWise 5 groupware.

Unlike the previous round of beta tests, which began early last month and were limited to about 200 sites, this beta cycle is open to all Novell gold and platinum resellers.

THE PATH TO GROUPWISE 5

February 1987	WordPerfect rolls out PC version of WordPerfect Library, which includes a calendar, editor, notebook and file manager.
August 1988	WordPerfect Library is updated and renamed WordPerfect Office 2.0; E-mail and group scheduling added.
June 1990	WordPerfect Office 3.0 is released with support for cross-platform E-mail.
June 1993	WordPerfect 4.0 ships with universal in-box.
June 1994	Novell acquires WordPerfect.
August 1994	Renamed offering, GroupWise 4.1, ships with NetWare integration.
June 1996	Novell begins initial beta testing of GroupWise 5, a client/server version of its groupware system that is tightly integrated with its Novell Directory Services.
July 1996	A widespread beta test of GroupWise 5 begins.

"The number of beta testers could be in the thousands if the resellers take advantage of it," said Eldon Greenwood, director of product management for GroupWise. This latest beta is the second beta version to encompass the full client/server functionality of the software.

Last spring, the company conducted a limited beta test of a version sans client/server support.

Also, this latest beta will be more stable and will run faster than the previous iteration, according to Greenwood. Specifically, it will eliminate some issues that early beta testers encountered when running GroupWise in conjunction with Novell Directory Services.

"The last beta trashed our NDS configuration, and we had to rebuild it," said one tester who asked for anonymity.

Greenwood confirmed that there were some conflicts "with specific NDS configurations and some third-party applications" in the earlier beta code. "I expect that [those bugs] will be fully taken care of in this new beta," he said.

GroupWise has an installed base of more than 5.5 million users worldwide, according to International Data Corp., a market research firm in Framingham, Mass.

The much-anticipated GroupWise 5 adds significant document management and workflow capabilities to the software's existing electronic mail, calendaring and scheduling, and threaded conversation capabilities.

The timely delivery of this next GroupWise beta may indicate that the company is on schedule to deliver the groupware package by the end of the summer, though company officials said that they will not release the software until they are satisfied it is stable.

Feedback to the GroupWise 5 beta overall has been positive.

"As far as features and functionality, I couldn't be more impressed," said beta tester Casey McNeal, director of product development at Brainstorm, Inc., a provider of reference products for GroupWise and other software packages, based here.

Earlier this month, Novell shipped GroupWise WebAccess, software for accessing the GroupWise universal in-box via Web browsers.

Link to Network World Fusion to see what beta testers think of GroupWise 5 From the main menu select News+.

NetworkWorld Fusion
http://www.nwfusion.com

WebAccess is shipping now for GroupWise 4.1, and will be available for GroupWise 5 by the end of the year.

Novell: (801) 222-6000.

Lotus looks to ease Notes integration pains

Seminars recognize that Notes raises both organizational and technical issues.

By Barb Cole
Cambridge, Mass.

Lotus Development Corp. is coming to the aid of customers that have large Notes networks in place but may not be getting the most out of their groupware installation.

The company has announced a series of seminars to be delivered by its business partners that focus on the organizational impact of groupware and how companies can maximize their Notes investments.

The content of the seminars suggests that achieving success with Notes may depend as much on solving corporate culture hurdles as it does on mastering the technical issues typically associated with developing and deploying groupware applications.

"Eighty percent of the issues around groupware are organizational," said David Coleman, principal of San Francisco-based consultancy Collaborative Strategies.

The seminars — Capitalizing on Lotus Notes, Organizational Renewal, and Team Development — are designed to help participants improve their ability to work in teams using groupware applications.

TOP FIVE FACTORS FOR MAKING NOTES WORK

1. Solid support from the top of the organization.
2. A clear business objective for what you want to do with it.
3. An awareness of cultural issues than can derail groupware applications.
4. A comprehensive plan and budget for network and technical support infrastructure.
5. A critical mass of Notes users.

SOURCE: LOTUS DEVELOPMENT, CAMBRIDGE, MASS.

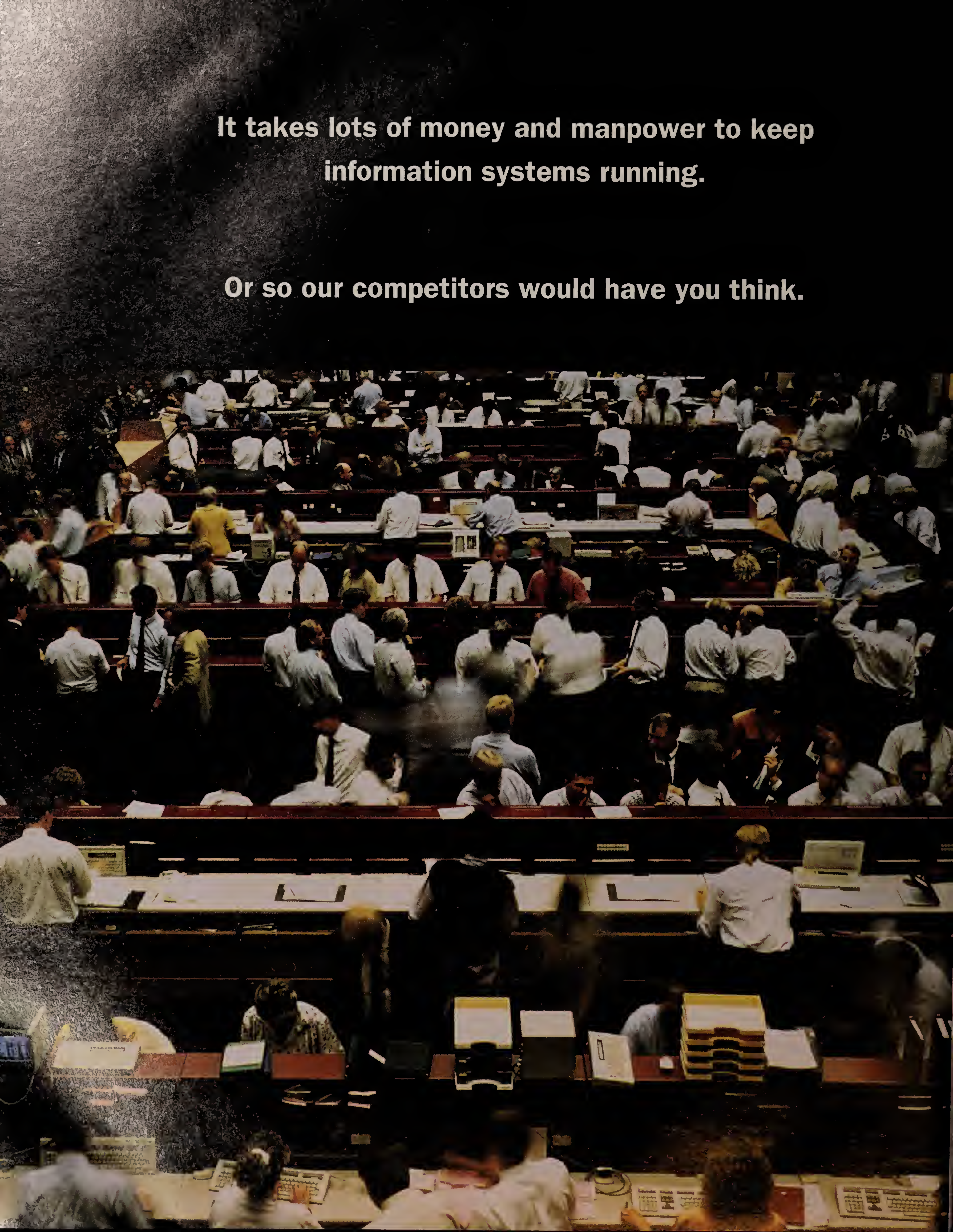
"Lots of people feel that their knowledge is the basis of their employment. With Notes, you're building this shared environment where people graze on each others' knowledge, and not all organizations or individuals support that," said Chip Emmett, director of the business applications division in the Washington, D.C. office of US Connect, a Lotus business partner that will offer the seminars.

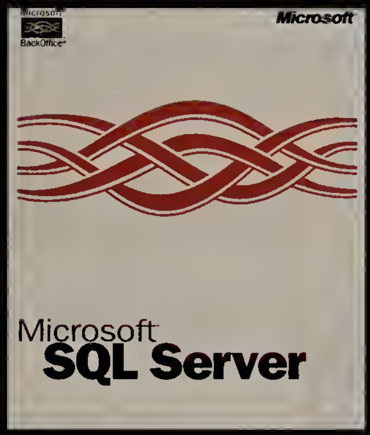
The seminars will address how to work around such corporate boundaries and successfully position Notes within the organization, he said.

The seminars also suggest that the more widespread Notes is in the organization, the more successful the deployment. In addition, solid support from the top corporate officials and a clear vision of the business benefits of the Notes applications are seen as key factors to a successful deployment.

The seminars, which range from half-day classes to three-day workshops, are based on research conducted by Lotus as well as the company's business partners. The seminars cost between $300 and $1,200 per student and between $3,000 and $15,000 for private classes.

Lotus: (617) 577-8500.


It takes lots of money and manpower to keep information systems running.
Or so our competitors would have you think.



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SHARED LOGIC

Marc Myers

Olympic effort could be much more

If you, like me, are among the six million people that have succumbed to the temptation of visiting IBM's Olympics Web site (http://www.atlanta.olympic.org), don't feel bad for having wasted company time. Just tell your boss that you are reviewing one of the most phenomenal technological feats of the decade: a worldwide network constructed in just 15 months.

The project — though it has run into some technical snags during the early going — demonstrates how much can be accomplished when an immutable deadline is accompanied by a virtually unlimited budget. IBM provided a $40 million sponsorship, but the company's actual expenses probably exceeded $1 billion.

The Internet setup utilizes two primary RS/6000 SP2 multiprocessing servers, one of which hums away on 52 processors in Southbury, Conn., while its buddy chugs along on 16 processors in Hawthorne, N.Y. Mirror servers run in Asia, Europe and the U.S. IBM developed new load-balancing software as part of its Web Object Manager that optimizes traffic, automatically finding and tapping the most available servers. Other aspects of the system — including the Global Shared Data Center — are so secret that we don't even know where they operate from.

For surfers who are into the Olympics, the services offered are superlative: You can get game results almost as fast as the major networks, download images and flicks of the world's greatest athletes and shop for official Olympic products.

But what I find most appealing about this system is that it was built so quickly and with such creativity.

What if IBM decided that this was something that could be done more than once?

We're talking successful enterprise systems built from the ground up in less than two years by committing resources without reservation and by keeping to a firm time schedule.

What about the IRS?

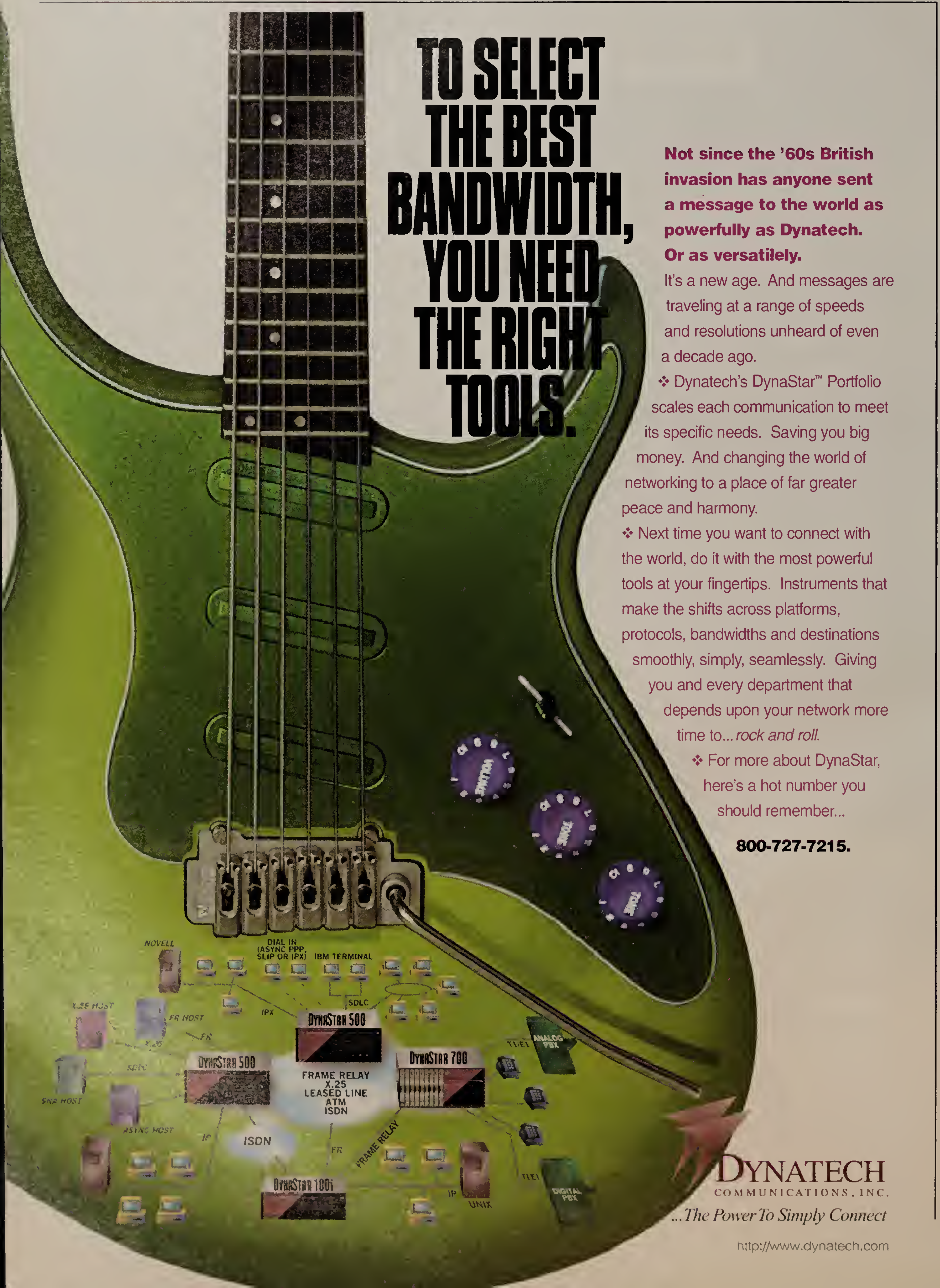
For example, if IBM were willing to do the same thing for the Internal Revenue Service that they did for the Atlanta Committee for the Olympic Games, couldn't the company earn an equal if not greater public relations benefit? The woes of the IRS information systems have been an embarrassing headline in the worldwide press — billions of dollars spent on systems that are still so unreliable and inaccurate that the agency is planning to outsource all information processing to the Department of Defense.

Why shouldn't America's leading computer company lend a hand in cleaning up a mess that it probably has made a significant profit on, selling hardware and software to our government that was never properly integrated?

While this idea may seem far-fetched, consider the upside: Instead of showing two scantily clad Finnish fans dancing during the first day of the Olympic swimming competition, the IRS could run a picture on its Web site of scantily clad yuppies in Mahwah, N.J., opening the mailbox to find a surprisingly large tax refund.

On a somewhat more serious note, the real essence of the story is that a lot of technology failures are simply a result of vendors whose primary focus is to sell products, not provide solutions. IBM has shown that when it is put on the worldwide stage, it can do the job. We would appreciate it if the company could spread a little of this knowledge into the core systems in our society that will have to survive long past the 17-day Olympiad.

Myers is CEO of Client/Server Connection, Ltd., a New York-based software development company. He can be reached via the Internet at mmyers@cscl.com.



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800-727-7215.

DYNATECH
COMMUNICATIONS, INC.
...The Power To Simply Connect

http://www.dynatech.com

Briefs

■ **Digital Equipment Corp.** *last week released a beta version of its new* **AltaVista** *search engine for personal computers. Called My Computer Private eXtension, the software works similarly to the popular AltaVista search engine for the Web, except its indexing and accessing information is stored on personal computers.*

The software runs on Windows 95 and Windows NT. It can be downloaded for free from www.altavista.software.digital.com/. The final version is due in late summer or early fall. Pricing has not been announced.

■ **Microsoft Corp.** *will distribute a* **Java viewer** *made by FutureTense, Inc. of Acton, Mass.*

The viewer displays Web pages designed using FutureTense Texture, a Windows-based Web publishing software system that lets designers create Web pages without having to tackle HTML coding or Java programming. Texture Viewer will be made freely available with Internet Explorer 3.0, due for final release in August.

■ *Start-up* **Seattle Software Labs, Inc.** *this week announced a* **low-cost network firewall** *called the WatchGuard Security System that features a Simple Mail Transfer Protocol and File Transfer Protocol proxy, plus an automated traceroute function to detect the source of an attempted intruder attack.*

WatchGuard, designed as a single hardware/software unit, costs $2,995 and is scheduled to ship in mid-August.

Seattle Software: (206) 521-8340.

■ **SAS Institute, Inc.** *last week announced that its SAS 6.11 rapid warehousing software now supports* **remote access over the Internet** *using a Netscape Communications Corp. Navigator plug-in called SAS Java Database Connectivity.*

SAS Institute: (919) 677-8000.

Macromedia gives Shockwave more jolt

Users to get higher quality streamed, compressed audio.

By Carol Sliwa
San Francisco, Calif.

Macromedia, Inc. today will launch a new version of its Shockwave browser plug-in that pledges to bring higher quality streamed and compressed audio to the Web.

With this third incarnation of Shockwave, users will no longer have to wait for an an audio file to download. They will be able to go to a Web site, click the play button and immediately hear full CD-quality sound streaming out of their speakers. That is, if they have a T-1 line.

"The files you start with are 44-KHz, 16-bit stereo, which is the definition of CD quality," said Philip Schiller, Macromedia's vice president of product management. "How much you compress it will certainly affect the quality, and depending on who your audience is, you can compress it more or less."

Slower setups mean less quality. At T-1 speeds, files can be compressed at a ratio of 11-to-1, leaving the listener virtual CD-quality sound, Schiller said. For ISDN, the compression rate is 25-to-1, producing near CD-quality sound. For 28.8 modems, compression is 88-to-1 for FM radio-quality sound, and with 14.4 modems, compression is 176-to-1 for AM radio-quality sound.

NetworkWorld Fusion

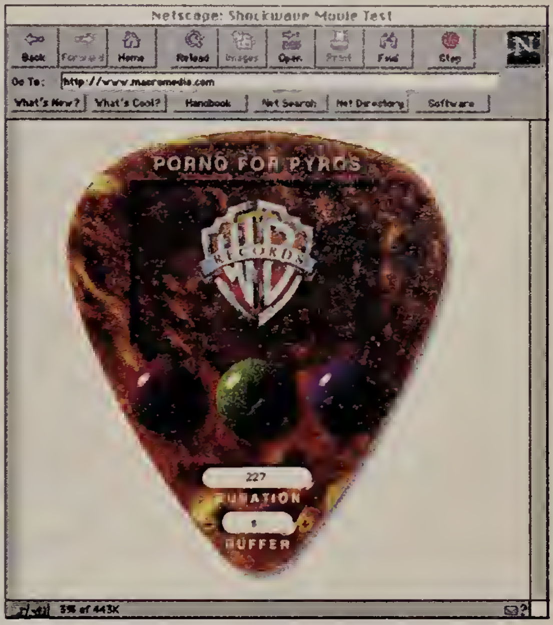
Learn how to make your own Netscape plug-ins on Network World Fusion (http://www.nwfusion.com). Select News+.

"It's a higher quality streaming audio format than anything else currently available," said Michael Goldberg, editor and publisher of "Addicted to Noise," an online pop culture magazine.

Goldberg's programmers have been testing the new Shockwave version to add sound clips to the album reviews and feature stories that his site posts on the World-Wide Web. They also use a competing solution, Real Audio, from Progressive Networks, Inc.

"It's not that we're going to replace Real Audio. Tons and tons of people have Real Audio players downloaded and are using them," Goldberg said. "But at this particular moment, the Shockwave audio is higher quality than Real Audio 2.0, the current state of the art."

Another West Coast company, 2-Lane Media, Inc., an interactive advertising and marketing agency, has been taking advantage of Shockwave's compression capabilities so they can put more sound into the games and movie Web sites they develop using Macromedia tools.



Shockwave's *third revision sounds like the real thing.*

"You can play tricks to optimize graphics so they compress down fairly nicely," said Jonathan Pajion, 2-Lane's executive vice president of marketing. "But with sound, you couldn't do anything before because if you drop the quality down, it sounds really lousy."

Pajion said Shockwave offers a relatively inexpensive solution. "Before now, most clients had to pay high licensing fees for Real Audio, which typically supports about a hundred or so simultaneous users," he said. "But the Shockwave plug-in allows similar performance, and in many cases, better performance, without the cost and with as many simultaneous users as the server will allow."

Shockwave can be downloaded free from Macromedia's Web site at www.macromedia.com. It will also be available with Netscape Communications Corp.'s PowerPack, Microsoft Corp.'s Internet Explorer and Windows 95, Internet-ready Apple Computer, Inc. Macintosh computers and the next version of America Online.

Developers can download free from Macromedia's Web site Shockwave Audio Xtras for Macromedia's Director 5, SoundEdit 16 Version 2 and Authorware 3.5. The software runs on Windows 3.1, 95 and NT, and Macintosh.

©Macromedia: (415) 252-2000.

Gauntlet fortified with Java, Web and SQL controls

By Ellen Messmer
Glenwood, Md.

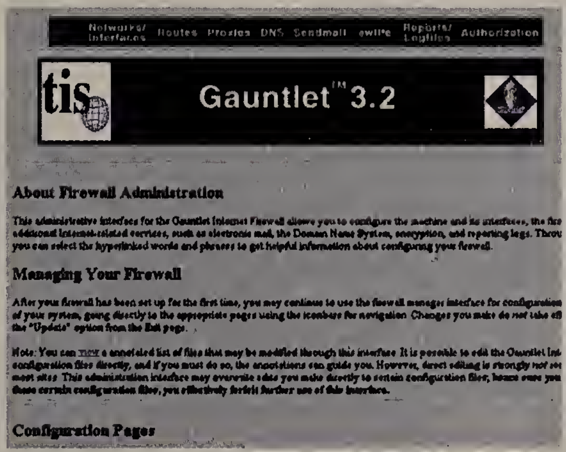
Trusted Information Systems, Inc. (TIS) next month will ship a new version of its Gauntlet firewall that can keep Java code off the corporate intranet, and control user access to Web and SQL databases, too.

The Gauntlet Version 3.2 lets a network manager define which employees can download Java applets from a remote server, and how to restrict access to the World-Wide Web. TIS also breaks a little ground in the firewall market with a SQL proxy that lets authorized users query Sybase databases located behind the firewall.

Until Sun Microsystems, Inc.'s JavaSoft division comes up with a solid way to control Java applets downloaded from remote servers with Java-enabled browsers, Java code will be regarded as a potential security threat by some network managers.

"We need a way to keep some control over Java until the security issues are resolved," said Rick Pinamonti, computer specialist at Federal Deposit Insurance Corp., which uses Gauntlet with the new JavaGuard feature.

FDIC recently decided to restrict access to Java, a decision that elicited fierce reaction from some FDIC employees, Pinamonti said.



Version 3.2 *of Gauntlet puts the kibosh on Java.*

However, Pinamonti pointed to the recent report from Princeton University researchers that called Java, in its current form, a security threat since "hostile applets" could attack computer resources if unwittingly downloaded.

JavaSoft has readied the Java Software Developers Toolkit (SDK) 1.1 for controlling applets through digital signatures, but its release has been delayed due to concerns that the U.S. government may restrict its use globally since SDK I.I includes encryption, a technology subject to export controls.

The Gauntlet JavaGuard blocks both Java and JavaScript, Netscape Communications Corp.'s scripting language supported in the Navigator browser.

The Gauntlet Internet Firewall Version 3.2, which runs on Unix, costs $11,500.

©TIS: (301) 527-9500.

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NETWORK HELP DESK

Network World tracks down answers to your questions. Please submit them to Chris Nerney via phone at (800) 622-1108, Ext. 451, the Internet at cnerney@nww.com or fax at (508) 820-1103.

Be helpful

While you're in the Help Desk conference on Network World Fusion, come to the aid of your peers. In Topic 62, a LAN administrator needs help figuring out why server utilization keeps hitting the wall.

The administrator has a 133-MHz Pentium server running Novell, Inc.'s NetWare 4.1 network operating system. The server has 128M bytes of memory and a RAID 5 disk array with 10G bytes of usable storage. He has applied all current patches and updates.

Here's what happens. Several times per week, the utilization shown in the server's Monitor utility hits 100%. It dips down into the 90% range periodically — ranging from 10 seconds to 5 minutes.

Generally, these events last several hours. When the utilization pegs at 100%, all users hang until the sporadic dips occur that open availability.

The Monitor utility also reveals that the major process is Netware Core Protocol requests, which account for 85% to 95% of the utilization. Cache buffers are usually in the 55% to 65% range.

The administrator has tried an EISA FDDI network interface card from one vendor and a PCI FDDI card from another.

The following are elements in his environment: Print Server is running with 56 printers; an uninterruptible power supply looks after the power supply; DSAWatch looks after a Dell Computer, Inc. SCSI array; SCSI Express makes two CD-ROM towers available as storage volumes; "and the villagers are knocking down the cubicle walls with pitchforks and torches," he says.

The administrator says he's moved the server to an Ethernet segment and is running LANalyzer for Windows to look for obvious occurrences. But he's looking for suggestions on where to go from there.

If you have any ideas for this user, please respond via the Help Desk conference (http:\\www.nwfusion.com) or via E-mail.

Visual variations: How to see and be seen in a group videoconference

Multipoint conference bridges can support four control modes for viewing participants.

By Art Zeile

A San Francisco sales representative needs to meet with company superiors in the Boston office to explain a dip in third-quarter earnings. Due to budget and time constraints, flying across the country is out. So what's the alternative?

Today, more and more companies are turning to videoconferencing to save time and money. This increasingly popular technology allows for two-way transmission of audio and video, creating a virtual meeting on TV at a reasonable price, with little to no advanced planning. Companies can choose from a variety of options, ranging from single-user desktop to group systems and from point-to-point to multipoint views.

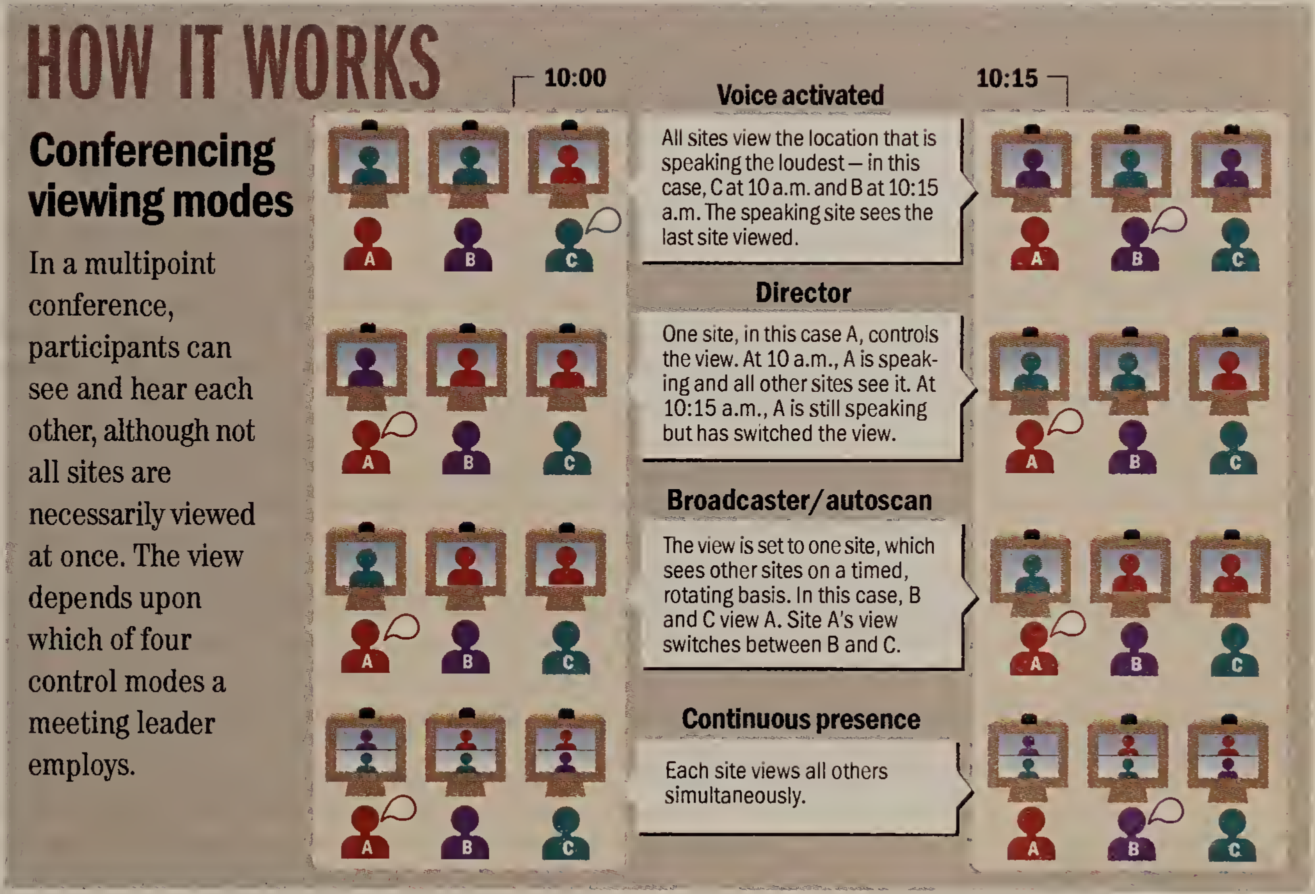
In a point-to-point videoconference, each participant views the other. It's not so straightforward when three or more sites are connected into a single meeting through a videoconference bridge or multipoint control unit (MCU).

Choosing who is seen when

As the popularity and accessibility of such multipoint conferences have increased over the past few years, video equipment and service providers have developed new viewing options. In a multipoint meeting, participants can both see and hear each other, although not all participants are necessarily viewed simultaneously.

Who is seen and when is determined by the control mode used during a multipoint videoconference. A number of options have been developed by industry leaders for the wide variety of videoconferencing user needs. The four primary control modes are voice-activated, director control, broadcaster/autoscan and continuous presence.

Voice-activated control is most commonly used. In this mode, all sites view the location at which the person is speaking the loudest. The MCU monitors the volume of each connection, copies the signal and sends it off to the others. The speaking site sees the previously viewed site.


HOW IT WORKS
Conferencing viewing modes
In a multipoint conference, participants can see and hear each other, although not all sites are necessarily viewed at once. The view depends upon which of four control modes a meeting leader employs.
10:00
10:15
Voice activated
All sites view the location that is speaking the loudest – in this case, C at 10 a.m. and B at 10:15 a.m. The speaking site sees the last site viewed.
Director
One site, in this case A, controls the view. At 10 a.m., A is speaking and all other sites see it. At 10:15 a.m., A is still speaking but has switched the view.
Broadcaster/autoscan
The view is set to one site, which sees other sites on a timed, rotating basis. In this case, B and C view A. Site A's view switches between B and C.
Continuous presence
Each site views all others simultaneously.
A
B
C

Voice-activated control mode is optimal for project team meetings during which participants are encouraged to speak freely. But to conduct a successful voice-activated meeting, participants should adhere to a certain etiquette. The speaker should hand off control in an orderly fashion by signaling to the next speaker: "What do you think about that Bob?" would work, for instance.

Conversely, an open-ended invitation can lead to participants simultaneously trying to take control, and the result is a dizzying visual display. In addition, the system should be muted when someone else is speaking so a random cough or any other background noise doesn't switch the view.

Calling the shots

The director control mode allows one site to take full control of which site is viewed at any one time, regardless of who is speaking. The view is set to one site, and holds on that site until another is selected. As with voice-activated control mode, only one site is seen at a time. The director control mode is optimal for presentations and question-and-answer sessions for which rigid control of the view is desired.

Broadcaster/autoscan, which is a variation of the director control mode, sets the view to one site but allows that site (the broadcaster) to see each site sequentially on a timed, rotating basis.

Broadcaster/autoscan automatically switches the broadcaster's view at a preprogrammed scan interval, regardless of who may be speaking.

This mode is used frequently in distance-learning applications, allowing the instructor to get visual feedback from the audience.

Continuous presence, popularly known as "Hollywood Squares," is the newest control mode. By splitting the screen into quadrants, this mode lets multiple sites be seen and heard simultaneously. As many as five sites can participate, with each site viewing the other four.

By necessity, however, the view of each site is reduced in terms of monitor real estate. This can be problematic for conferences with a large number of participants because the ability to read visual cues is reduced.

It is worth noting that control modes, like many videoconferencing features, are generally application-driven. As new applications are found for videoconferencing, control modes will be created to support them.

And although explaining a less-than-profitable third quarter is hardly a comfortable task in any environment, videoconferencing can remove the added hassles of hopping on an airplane and flying across the country. It can make a difficult job just a bit easier.

Zeile is vice president of sales and marketing for Link-VTC, a videoconferencing service provider in Boulder, Colo. He can be reached via E-mail at azeile@linkvtc.com.

Need information?

Let *Network World* provide a quick primer on an important or emerging technology. If you have an idea for Technology Update, contact Beth Schultz by phone at (312) 283-0213 or via the Internet at bschultz@nww.com.

EDITORIAL INSIGHTS

When is a VPN not a VPN?

"Why shouldn't we quarrel about a word? What is the good of words if they aren't important enough to quarrel over?"— G.K. Chesterton

Words help us understand the world, certainly in the networking business where every year a new crop of expressions gets harvested. But lately, firewall vendors and Internet service providers have been using an expression that just doesn't compute.

The term is Virtual Private Network, or VPN for short, and according to the marketing people, if you put encrypting firewalls at your Internet access points, you've created a VPN over the Internet. You now have a way to send encrypted IP packets over the public Internet or your private intranet.

That capability addresses a very real security concern. But that kind of VPN is not to be confused with a real Virtual Private Network, a service that emerged a decade ago when the long-distance carriers figured out how to logically define a private voice network within their public switched networks.

Newton's Telecom Dictionary defines Virtual Private Network as "a carrier-provided service in which the public switched network provides capabilities similar to those of private lines," such as "on-demand dial-up circuits or bandwidths that can be dynamically allocated."

Oddly, the classic reference work, a book called *Firewalls and Internet Security* by Cheswick and Bellovin, doesn't seem to mention the term VPN.

AT&T, Sprint and MCI created VPN services to give their large corporate customers the economies of scale and the control of a private network without having to purchase private lines.

Back in 1985, Sprint was the first carrier to offer VPN service and Marcus Canipe, Sprint's director of product management, said he's concerned about the term VPN being hijacked.

"It's fun to be considered popular enough for people to steal your idea," Canipe said. But "we'd be worried about customers ordering the wrong thing."

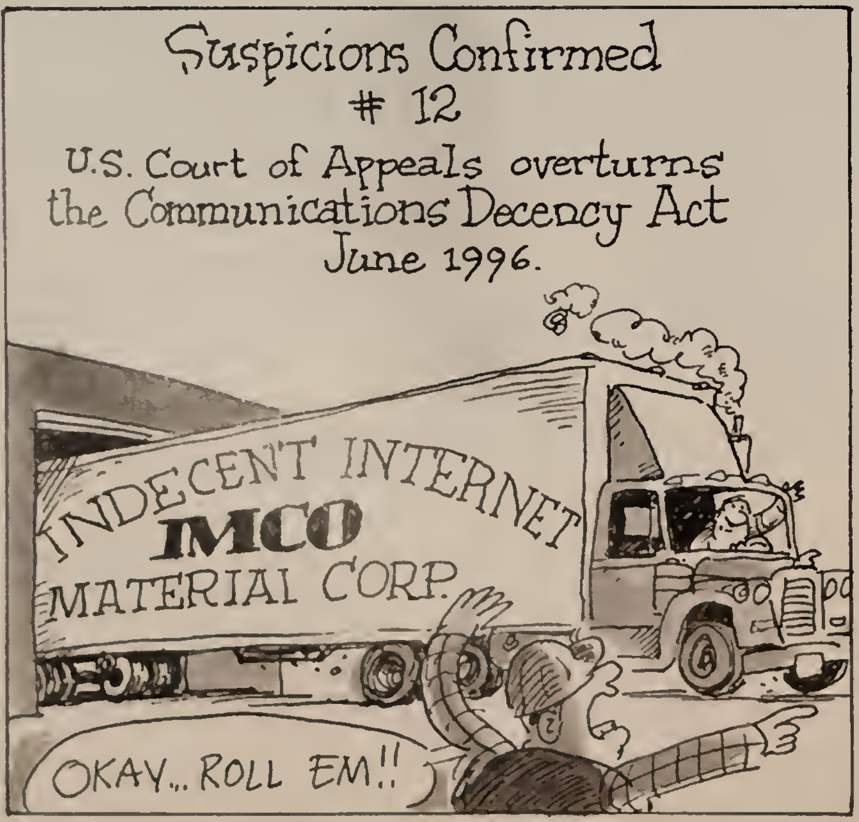
Now maybe I'm being too picky about all this. Maybe the firewall vendors and ISPs are simply lacking in originality. Perhaps an expression can take on wholly different meanings and not sow confusion in a world as large as the networking industry.

But I don't think so. It's hard enough to keep things straight these days without doubling up on definitions. What do you think?

Ellen Messmer, senior Washington correspondent
emessmer@nww.com

Teletoons

By Phil Frank and Joe Troise
baba@sfgate.com



ABOVE THE CLOUD

Flurry for overlapping calendaring specs is badly in need of consolidation

James Kobielus

The group calendaring industry's biggest problem, it seems, is finding time in its busy schedule to define a common set of standards — and then implementing the ones it develops.

Several industry groups have announced efforts to define group calendaring and scheduling standards (*NW*, July 8, page 1). What's puzzling about this flurry of activity is that no vendor has implemented the X.400 Application Program Interface Association's (XAPIA) two-year-old Calendaring and Scheduling API (CSA), which was developed with considerable industry input.

Furthermore, no one has explained clearly how the new standards will address the deficiencies — if any — in CSA. Most new standards efforts aim to adapt CSA to run over new transport media, such as the World-Wide Web or messaging systems compliant with Multi-purpose Internet Mail Extensions (MIME), but don't significantly extend the standard's functional scope.

An even more fundamental issue is whether users even need multivendor group calendaring and scheduling standards. Most group calendaring products are deployed in single-workgroup or single-facility environments in which users have little need to interface to other vendors' calendaring products installed elsewhere.

Still, there are many potential uses for calendaring standards, especially in support of distributed Internet collaboration applications, such as chat, conferencing and workflow. With the growing volume of online, real-time Internet events, there is a need for standard schedulers to coordinate participants in many time zones, transmitting event dates and times to users' existing scheduling systems.

> *HP and Netscape have proposed that the existing Internet Message Access Protocol Version 4 be expanded to support remote access to and manipulation of mail-enabled calendaring client applications.*

Let's briefly review the leading would-be calendaring standards to determine which have any hope of filling a useful niche.

CSA, released in November 1994, defined APIs for desktop applications to invoke server-based calendaring functions as well as exchange and update calendar events. It can be deployed transparently over various LAN/WAN electronic mail, client/server and remote procedure call transports. The standard absorbed specifications previously developed by the MHS Alliance, which had been geared solely to mail transport.

Incorporating and expanding upon CSA are two newer calendaring standards geared toward Internet mail connectivity. X/Open Consortium has published CSA as its X/Open Calendaring and Scheduling implementor's specification for Unix and TCP/IP environments. Versit — a development consortium including Apple Computer, Inc., AT&T, IBM and Siemens Rolm Communications, Inc. — has incorporated CSA into its vCalendar specification. The vCalendar spec allows CSA-compatible applications to support calendar exchanges and updates via MIME-compatible mailers.

As if three competing standards weren't enough, two more standards efforts have been announced recently. Hewlett-Packard Co. and Netscape Communications Corp. have proposed that the existing Internet Message Access Protocol Version 4 be expanded to support remote access to and manipulation of mail-enabled calendaring client applications. And Lotus Development Corp. has announced its intention to develop an Internet Calendaring Access Protocol (ICAP) geared toward Web transports.

Over all this confusion looms the shadow of Microsoft Corp. The Redmond, Wash.-based software giant has not weighed in formally on calendaring/scheduling standards, but one would expect it to join the fray soon, seeing as Microsoft has a strong vested interest as purveyor of Schedule+, a leading calendaring package, and Exchange, a mail-enabled groupware environment.

Perhaps the best focus for standardization is the Internet Engineering Task Force (IETF), which is open to user participation and can ensure interoperability with the Web and other Internet-based services. It would be a shame to see a vendor such as Microsoft or Lotus take charge of standards-setting and bend the process to favor its own products. (You can contact the IETF at http://www.ietf.cnri.reston.va.us.)

How should these standardization efforts be merged? They should probably retain the core CSA function set, which covers all the main calendaring and scheduling functions.

The trend toward transport-independent, multiprotocol calendaring and scheduling services should be encouraged, as well. Calendars should be maintained, viewed and exchanged in HTML-formatted Web pages, while scheduling meetings could be handled through store-and-forward messaging systems.

Users should also urge vendors of desktop operating environments and browsers — most notably, Microsoft and Netscape — to embed industry-standard calendaring/scheduling functions within their products. Universal availability of desktop calendar capabilities will familiarize users with this technology and help them integrate it into their work styles.

Standards are important for the group calendaring/scheduling market, but mass acceptance should be the industry's main goal. Calendaring applications can only gain widespread acceptance if they are a default component in most users' environments.

Kobielus, a contributing editor to Network World, *is a senior telecommunications analyst with LCC, L.L.C., an Arlington, Va.-based network design and engineering firm. He can be reached at (703) 807-5075 or via the Internet at kobielus_james@lccinc.com. The opinions expressed are his own.*

VENTURE OVER THE HORIZON

Gaggle of Gigabit E-net start-ups will thin out

Kevin Fong

As a venture capitalist, my job is to visualize the world three to five years into the future. Typically, companies take 12 to 24 months to complete their products, then spend another 12 to 18 months evangelizing and selling those products. Therefore, when I analyze an investment in an early-stage technology company, I need to imagine the future environment in which it will compete, not the environment that exists today.

For example, when I made my first investments in Alantec Corp. and Crescendo Communications, Inc. in 1991, the internetworking world believed in only hubs and routers. I believed that the LAN switching that Alantec and Crescendo were developing would be important.

Today, LAN switching accounts for over $1 billion in revenue for Cisco Systems, Inc., whose acquisition of Crescendo provided the foundation for Cisco's LAN switching business unit. Fore Systems, Inc., which recently acquired Alantec for $800 million, can expect to reap an estimated $60 million in revenue this year from Alantec's LAN switching technology.

Another hot technology today is Gigabit Ethernet. Despite all the excitement Asynchronous Transfer Mode has generated, that technology has a way to go before it is ready for prime time. As a result, a number of entrepreneurs have started thinking about how to deliver the same services as ATM, but in a more evolutionary fashion — hence, Gigabit Ethernet's sudden popularity.

One of the lessons I've learned is never to underestimate the amount of stretch there is in an existing technology. The advantages of flogging more performance from a proven technology are immense.

This could certainly be the case with Gigabit Ethernet. Upgrading to Gigabit Ethernet would be relatively easy — existing software applications would not need to be modified, and the basic infrastructure of networks would not change. At a standards level, decisions could be made very quickly because of the groundwork laid by past IEEE work on Ethernet. After some investigation, entrepreneurs have found that Gigabit Ethernet can be priced very attractively compared with ATM.

Gigabit Ethernet has the potential to become an enormous market. In the final analysis, I think it will either eliminate or, at a minimum, delay ATM's popularity at the desktop and at the workgroup collapsed backbone. Gigabit Ethernet will also replace the large number of FDDI rings in use today.

Who is working on Gigabit Ethernet products? Certainly Cisco, Bay Networks, Inc. and 3Com Corp. are not going to stand still the way they initially did with Fast Ethernet. In fact, Cisco has made public announcements about its desire to introduce Gigabit Ethernet products this year.

The more interesting products, however, will come later this year and in early 1997 from start-up companies such as Granite Systems, Inc.; Rapid City Communications, Inc.; Packet Engines, Inc.; Extreme Networks; Acteon Networks, Inc.; Mammoth Networks, Inc.; and Prominet Corp. These companies are moving rapidly to fill in the various product niches that Gigabit Ethernet will create.

Gigabit Ethernet start-ups have received the enthusiastic endorsement and backing of the venture capital community. In fact, the question today is not whether Gigabit Ethernet is real, but whether too many companies have been launched targeting this area.

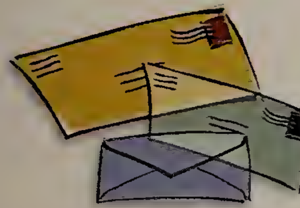
The rapidity with which these companies have been formed appears to be a type of "venture capital fratricide," akin to what happened in the early 1980s when multiple disk drive companies were created simultaneously.

The Gigabit Ethernet market is large enough for two or three companies to be successful, but certainly not seven or 10. Money will be lost by investors in many of these companies. The winners will be those companies that not only have good products and technology, but also can differentiate themselves based on their teams and business strategies.

For users, Gigabit Ethernet networks will dramatically improve quality of service and address the bandwidth requirements for multimedia applications. For investors, picking winners will involve carefully evaluating each company's business model and ability to meet its goals.

Fong is a general partner of Mayfield Fund, a venture capital firm based in Menlo Park, Calif. He can be reached via the Internet at kfong@mayfield.com.

MESSAGE



QUEUE

Bugged by IBM

Regarding your Server Test Series piece on IBM's PC Server 720 (May 27, page 51):

Obviously, you need to re-evaluate your position on this product after IBM's recent announcement concerning the enormous bug problems with the platform. They can't seem to code themselves a fix for the platform, so they decide to discontinue the line and replace it with the PC Server 704.

There are just a few small problems with that approach. First, the 704 is 30% lower in capacity and costs 10% more than the 720. Second, what happens to the customer's three-year on-site warranty for the 720? Third, what about the customer that has just spent nine weeks of man-hours trying to debug the 720 to make it stable?

After IBM's nondisclosure of bugs in the 720 platform, who wants to invest in replacing 22 servers with another IBM product with the same business ethics behind it?

Scott Hill
President
Digital Publishing, Inc.
Houston

Dim view of Sun

I agree wholeheartedly with Mark Gibbs' column "Sun and Gibbs aim for world domination through English language" (July 1, page 54). Perhaps I should claim a trademark on the name "Joe" in case Sun's lawyers decide to start going after synonyms for Java.

I support trademark-infringement actions against persons or organizations that try to pass off their products or Web sites as an official component of a trademarked product. But Sun's approach suggests that its lawyers are in urgent need of something to justify their continued employment.

Joe Morris
McLean, Va.

Sun and the very same cadre of lawyers that are attempting to own the word "Java" have sued my company, Astro-Med, Inc., claiming exclusive rights to use the word "Sun" and trying to prevent us from using our registered trademark, Sundance.

Astro-Med and Sun conduct business in completely different markets and do not compete. Long before Sun was formed, Astro-Med sold data recorder instruments. Some of our label-making devices are marketed and sold under the name Sundance.

Last summer, Sun sued Astro-Med, claiming that it has exclusive rights to use all words beginning with "Sun," including "Sundance." Perhaps Sun's next move will be to prevent the North American Plains Indians from performing their ritual sundance. What next?

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Astro-Med
West Warwick, R.I.

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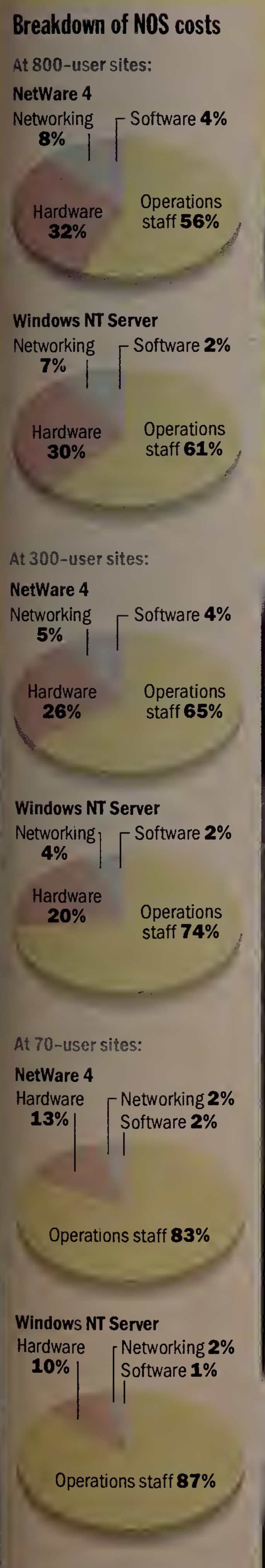
Adding up NOS costs

NetWare 4's directory gives it the edge in the enterprise, while NT Server has appeal in smaller nets.

By Charles Bruno

Breakdown of NOS costs



SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

Legions of National Semiconductor Corp. network administrators two years ago were running their own Digital Equipment Corp. PathWorks LANs as independent fiefdoms. Today, just three people manage the company's enterprisewide NetWare 4.1 directory, essentially riding herd over 3,400 users in North America, Europe and Asia.

"That is a tremendous savings," says Steve Nitenson, a principal analyst and project manager in National's International Business Group. "With the advent of Novell's [Novell Directory Service], we were able to centralize administration."

While you should never base your network operating system purchase decision solely on cost, it's a fact of life that the upfront capital costs and longer-term economics of a NOS implementation do play a role, so you've got to understand all the implications.

With Novell, Inc. and Microsoft Corp. continually topping each other with feature and functionality enhancements, cost-of-ownership assessments may be the deciding factor as to whether NetWare 4 or Windows NT Server is the right choice for your enterprise.

Other options exist, most notably IBM's OS/2 Warp Server and Banyan Systems, Inc.'s VINES. But NetWare is the undisputed king of the NOS hill and NT Server is the up-and-coming challenger, so we chose to have these two go head-to-head against each other in this analysis. (Warp Server users, take heart – there are some numbers in here for you, too.)

The upshot is that, for the most part, NetWare 4 prevails in large enterprise nets on the strength of its directory service, which confers many cost benefits. However, Windows NT Server fares well in its own niche, mainly workgroup-centric environments and small businesses.

Running the numbers

Empirical data on NOS cost-of-ownership is hard to come by. Of the more than two dozen NT Server user groups we contacted for this article, not one could address the cost-of-ownership issue. NetWare users who have conducted such exercises guard their data closely.

That leaves studies conducted by independent research houses, which are frequently underwritten by vendors. Often, those studies provide contradictory evidence. Still, it is possible to paint a cost-of-ownership picture by piecing together data gleaned from a number of sources.

One of the most detailed studies is a report by International Data Corp. (IDC) that was underwritten by Novell. "Novell NetWare 4.1: Reducing Cost of Ownership" is based on 150 interviews with network managers across a diverse spectrum of companies and networks.

The IDC survey reports that NetWare 4 is 7.2% less expensive than NT Server in large sites (800 users), due largely to its lower operations staff costs and its ability to consolidate greater numbers of users per server.

IDC says NetWare 4 costs $116 per month per user in such sites, vs. $125 for NT Server. That equates to

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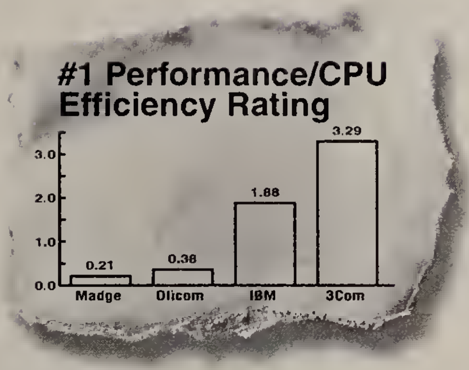

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World Wide Web site at http://www.3com.com an annual difference of $86,400 for a site with 800 users. NT Server is likewise more costly at medium sites (300 users) to the tune of $46,800 annually and at small sites (70 users), by a margin of $73,920.

Business Research Group (BRG) of Newton, Mass., just last month released its own PC LAN cost-of-ownership report, which it conducted on behalf of IBM. In this report, IBM's OS/2 Warp Server dominated almost every category in a survey of 250 users (see graphic). But there's one big caveat to both the IDC and the BRG numbers: They're based on average number of nodes at each survey participant's site.

In BRG's study, for instance, Warp Server users had, by far, the greater number of nodes per site (2,023), compared with NetWare 4 (574) and Windows NT Server (936) users. So, when Warp Server users divide their total costs by their number of nodes, they come out with a lower cost per node than NetWare 4 or NT Server users.

Microsoft assailed IDC's results for the same reason — the survey based cost-of-ownership results on 1,786 users at NetWare sites vs. 1,081 at NT Server sites. Microsoft claimed this gave Novell an advantage in cost-of-ownership results. But analysts industrywide say that the numbers should hold up, because NetWare has been installed much longer and an average NetWare 4 site is likely to have more clients than an NT Server installation.

Here's another take: Dave Capuccio, vice president and research area director of network technology for Gartner Group, Inc., has compared NetWare 4 migration costs with NetWare 3.X.

For a 1,500-user, 20-server NetWare 4 environment, you would likely spend $113,818 the first year, equating to just more than $75 per user. That estimate takes into account license upgrades and administrative costs, Capuccio says, but not the price of base software and hardware. By the fourth year, your NetWare 4 costs would rise to $224,000 annually.

Gartner does not have Windows NT Server data to share.

What is interesting about BRG's survey is that it compares NOSes according to common network tasks. Using Warp Server, it would take you 6.6 minutes to define a new user at a small LAN site; it'd take you 8.3 minutes to perform the task with NetWare 4 and 11.3 minutes with Windows NT Server, BRG says. At large LAN sites, those results shift: You'd spend 9.3 minutes to define a new user with Windows NT Server, vs. 9.9 for Warp Server and 11.3 for NetWare.

But if you look at other administrative tasks, such as updating a LAN configuration or performing a client software upgrade, NetWare 4 shines. When updating a LAN configuration, it took NetWare nearly 20 minutes less than either competitor. And in software updates, it was nearly in a dead heat with Warp Server, and 17 minutes ahead of NT Server.

Directory directions

Such calculations are important to the overall equation. Over and over again, consultants and users hammered home the message that the heaviest costs come from labor-related activities of supporting the NOS — in terms of installation, integration, end-user support and network maintenance. The biggest component of that, according to Martin Dunsby, senior manager of Deloitte & Touche's Network Center for Expertise in Atlanta, is end-user support, which shows up through auto software distribution, remote control and centralized asset management.

Those administrative services provided under end-user support are closely tied to the NOS' directory service, which is where NOSes begin to diverge from a cost-of-ownership standpoint. Users and analysts agree that NetWare 4 holds a commanding cost-of-ownership advantage over Windows NT Server in terms of operations support costs tied to end-user support.

"If you compare Windows NT Server to NetWare 3.12, then NT has a slight edge with its GUI," says Gartner Group's Capuccio. "If you compare Windows NT Server to NetWare 4, then Novell has a significant advantage because of its centralized directory."

To understand the power of NDS, Capuccio says you've got to consider the total access points users need. It's not enough today to connect to one file server; you may need links to database servers, Web servers and remote access servers.

"Without a centralized directory like NetWare 4's NDS, when you need to change a user's password or access rights, you need to make the changes to all of the access points available to that user," Capuccio says.

Consider the differences between NetWare 3.X and NetWare 4. According to a cost-of-ownership analysis tool developed by Interpose, Inc. for Novell, a network shop with 35 servers and 1,250 workstations will bear $19,000 in administration costs for NetWare 3.X in the first year. With 25% annual growth, the shop will see maintenance costs skyrocket to $52,000 in five years. With NetWare 4, you can reduce annual administration tasks to $9,000 the first year, increasing to $26,000 by the fifth year. This yields a cumulative savings of $83,000 over a five-year period by using NetWare 4 in place of older versions of the NOS.

Those savings are due largely to the fact that changes to NetWare 4 user accounts or network devices are made once and then replicated across the network, whereas older versions of NetWare require the changes to be made to each NetWare bindery. Likewise, Capuccio says, NetWare 4 holds a similar advantage over NT Server.

Upgrading NetWare: The numbers say it all

Derek Kolb only needed to run the numbers to demonstrate to his managers at ZooAtlanta the urgency of upgrading to NetWare 4.

As manager of information systems for Atlanta's zoo, Kolb manages a NetWare 3.12 net with two servers and 100 clients in a single building. But the nonprofit organization is now facing a major upgrade, in which it plans to network 43 buildings across the campus environment.

Because budgets are scrutinized more closely at nonprofit organizations, Kolb knew he needed to make his case for NetWare 4 by forking over some attractive evidence about the costs and associated savings accruing from the move.

Kolb used a software tool called Client/Server Solution Advisor, from start-up Interpose, Inc., to conduct a cost-of-ownership analysis of NetWare 4.

"When I showed [management] some of the sample reports, they were stricken with the impact of it all," Kolb says.

"They never realized the costs associated with the network and how much that lost productivity due to net downtime impacts the business," he said.

Interpose's tool conducts a detailed analysis of your NetWare 3.X site, and compares that to the costs of running NetWare 4 for a 10-server, 300-user LAN with 20% annual growth. Kolb used Interpose's estimates to enlighten management.

ZooAtlanta's *Derek Kolb uses cost-of-ownership software to justify a NetWare 4 migration.*

For that sample configuration, Interpose says users will spend $124,500 to implement NetWare 4 today, and $190,506 over a five-year period. NetWare 3, by comparison, will cost $57,980 over the same period for a similarly configured net.

Those numbers contrast with a Gartner Group, Inc. analysis that estimates first-year costs of $113,818 for a 20-server, 1,500 user NetWare 4 environment. Interpose says its implementation costs are higher because it included use of Novell's ManageWise and GroupWise alongside NetWare 4.

NetWare 4's Novell Directory Services (NDS) can reduce administration costs by centralizing server administration and replicating changes to servers across the network. That alone will save users $13,464 within the first year, according to Interpose, and $105,985 over the five-year period.

NetWare 4 features such as file compression and memory block suballocation will yield a reduction in storage costs.

You can save $25,500 over the first year, and $344,500 over the five-year period, as compared to NetWare 3.X.

Taking NetWare 4 benefits into account for a five-year period, Interpose's software predicts users can save $959,876 over NetWare 3.X during a five-year period. That number includes savings contributed from the use of Novell's ManageWise and GroupWise products, as well.

"Now, I have numbers that show the bottom-line impact of the network upgrade," Kolb says. "This brings it to a level [management] understands."

— *Charles Bruno*

Surveys differ on NOS costs

	Business Research Group[1] (based on 250 interviews)				International Data Corp.[2] (based on 150 interviews)			Gartner Group, Inc.[3]
Product	Annual cost per node (small LAN)	Annual cost per server (small LAN)	Annual cost per node (large LAN)	Annual cost per server (large LAN)	Annual cost per user (70-user site)	Annual cost per user (300-user site)	Annual cost per user (800-user site)	Annual cost per user (1,500-user site)
NetWare 4	$757	$11,729	$202	$4,839	$3,720	$1,824	$1,392	$76
NT Server	$1,017	$10,167	$123	$4,076	$4,776	$1,980	$1,500	N/A
OS/2 LAN Server	$782	$8,310	$53	$3,584	N/A	N/A	N/A	N/A

[1] BRG's annual per-server and per-node costs represent the amount of time administrative personnel spend overseeing their LANs, divided by the number of servers or the number of nodes in the organization, and then multiplied by the annual salary of a LAN administrator.

[2] IDC numbers are annualized results taken from the company's cost-per-month, per-user figures. IDC surveyed users about the monthly hardware, software, network and operations staff costs relating to a NOS on a per-user basis.

[3] Results taken from a four-year cost-of-ownership model for upgrading from NetWare 3.X to NetWare 4.1. Gartner's analysis represents administrative costs and the upgrade cost of the license – it lacks hardware and other license costs.

National's Nitenson says NDS makes it easy for a user to plug in anywhere in the network and authenticate himself, instead of having to maintain separate accounts on different Windows NT Servers for that user. "That means you dramatically reduce administrative costs," he says.

Ken Waldmiller, manager of facilities automation at Georgetown University, understands the issue. Now a NetWare 4 shop, Georgetown migrated from NetWare 3.11 due largely to NDS.

Under the old NetWare scenario, administrators had to change passwords and other administrative tasks on a per-server basis by tinkering with each logon script. Now, once users are registered in an NDS directory tree, "it's easy to give extra rights to a file system or to an application," Waldmiller says.

You can't do that with Windows NT Server because of its directory's domain structure, Capuccio says. "You can make domain structures look like a single entity to the end user, but not to the administrator," he says.

Get more information on network operating system cost-of-ownership issues by exploring Network World Fusion. Linked resources include Interpose's cost-of-ownership page and dueling comparisons from Microsoft and Novell. Select NetRef, Technology Resources then LANs/NOSes.

Network World Fusion
http://www.nwfusion.com

IDC's cost-of-ownership survey suggests Windows NT Server requires an average of 15% to 43% more operations staff than NetWare — a factor users and analysts attribute largely to the differences in directory services. IDC goes on to say those personnel differences make Windows NT Server 7% to 28% more expensive than NetWare 4.

It turns out that operations staff costs account for the lion's share of a NOS' related expenses. In NetWare 4, operations staff costs account for anywhere from 56% to 83% of the total NOS cost, depending on the size of the network; Windows NT Server's administrative costs range from 61% for a large 800-user net to 87% of total costs for a small 70-user net, according to IDC.

Another related issue coupled to the directory concern is that Windows NT Server doesn't have the ability to distribute security administration down to the workgroup or to an operating company, if desired.

Because Windows NT Server lacks a hierarchical tree directory structure, you have to establish domain trusts — basically relationships between domains — to get any sort of account administration, and that information is minimal at best, users say.

Don't think Microsoft isn't aware of its directory dilemma. "This is one area we are definitely working hard to improve," says Enzo Schiano, Microsoft's group product manager for Windows NT Server.

Another cost-of-ownership knock against Windows NT Server is its lack of direct-access storage device (DASD) management. Windows NT Server does not have the ability to allot users a predefined amount of disk space, as does NetWare 4. "You can chew up as much storage as you want and that is a major concern in the NT environment," says Brian Massey, a technical analyst with Paranet, Inc., a Houston consultancy.

On the plus side, however, NT Server is tightly coupled with certain applications, which can ease administrative functions, says Karen Alonardo, network operations manager at entertainment software giant Electronic Arts, Inc. in San Mateo, Calif.

The firm has committed to using Microsoft's Exchange electronic mail engine alongside a suite of Microsoft office productivity applications. It has decided to migrate slowly from its 50 NetWare 3.X servers to Windows NT Server, Alonardo says, largely because of the economies of integrating administrative functions under a single operating system.

"There's a very tight integration among all the products right down to the OS in terms of how they can be administered," Alonardo says. "We'll be able to save a lot on administrative headcount because one person can manage an entire domain."

Hardware fare

There's also hard capital costs to consider in a cost-of-ownership analysis, beginning with hardware.

John Dubiel, manager of strategic planning and technology at Boston Edison Co., says a migration to NetWare 4 has enabled the utility to consolidate servers, thereby reducing both administrative and hardware costs.

Boston Edison decided last October to migrate its 100 servers and 2,500 workstations from NetWare 3.X to NetWare 4, and is about halfway to its goal. Although Dubiel declines to talk specifics about the company's cost-of-ownership analysis, he says NetWare 4 has provided some cost benefits.

For instance, under NetWare 3.1, the company was limited to 250 users per Pentium server, each with 64M bytes of memory and 12G bytes of storage. Now the company supports 500 to 700 users on high-end Pentium servers with 256M bytes of memory and as much as 48G bytes of RAID storage. That has enabled the utility to consolidate data servers — from about eight down to five. The upshot is you have fewer servers for administrators to handle.

"If we stayed with 3.12, we'd have been forced to add a lot of memory and DASD to get it to run as well as NetWare 4," Dubiel says.

He's not alone. According to IDC's cost-of-ownership white paper, survey respondents will increase the average number of users per server from 41 to almost 60 as they migrate from NetWare 3.X to NetWare 4.

Network growth will far outpace file server increases, the survey says.

ADVICE FOR THE COST-CONSCIOUS

To determine network operating system cost-of-ownership, you need to consider internal network plans for systems and software changes three to five years out, says Tom Pisello, president of Interpose, Inc., an Altamonte Springs, Fla., start-up that builds cost-of-ownership analysis tools. He suggests a six-step plan of attack:

- **Assess your LAN assets.** Survey the network to understand what really lies out there, including hardware, software and network components.
- **Factor in downstream project costs.** LAN-based system and software upgrades will have an impact on the cost of managing network resources.
- **Gather cost metric data.** Analysts such as International Data Corp. and Gartner Group, Inc. maintain average costs for LAN servers, client workstations and other gear required to establish a baseline cost model.
- **Survey net administrators.** Have them log daily tasks for two weeks so you can develop trend data that shows how their time is actually spent, as opposed to how it's supposed to be spent.
- **Quiz the purchasing department.** You'll need to learn about replacement and upgrade costs for key network gear.
- **Calculate your cost of ownership and compare it to the cost metric data gleaned from consultancies in Step 3.** "You'll know pretty quick whether you have better or worse practices," Pisello says.

Pisello is quick to admit you don't need an automated software tool to conduct a NOS cost-of-ownership analysis. Its chief benefit, he says, is saving time.

Interpose's Client/Server Solution Advisor, and other tools like it, query users for the required data and handle the number crunching and analysis. Interpose's tool comes with a built-in asset tracker to help identify components connected to your network and reduce some of the data collection you'd otherwise do manually. The product, which has been used to analyze networks with as many as 10 servers, costs $495 for a base package.

Next month, an enhanced version will be available that handles up to 50 servers across segmented or departmental campuses, Pisello says. It will also include object cost models for printers, routers, hubs and an assortment of network gear.

"There's pretty much nothing we won't be able to cost-out in the next release," Pisello says.

– Charles Bruno

The survey stops short of a comparison to Windows NT Server, but users and analysts agree that NetWare 4 servers generally do a better job of handling heavier loads, even though Microsoft points out that its NOS can handle up to 40,000 users per directory domain.

"You can't scale as many clients on a Windows NT Server enterprise environment as you can in a NetWare environment," says National's Nitenson. National should know; it deploys NetWare 4 servers for file and print services, and maintains Lotus Notes and other applications on Windows NT Servers.

NetWare 4 runs best on high-end Pentium-class machines or superservers with multiple processors, according to Nitenson.

"We have large pockets of people on those machines and still minimize the number of server connections, meaning the number of boxes we need goes down," he says. By contrast, he says the number of Windows NT Servers running Notes is far more than if the company had chosen to run Novell's GroupWise on NetWare 4 servers.

Microsoft's recent release of Windows NT Server Beta 2.0 attempts to correct the performance issue; the vendor says file server performance in the new version offers twice the throughput of Windows NT Server 3.51.

Electronic Arts' Alonardo says NT Server holds an advantage when running on multiple-CPU machines. She says NT Server performs very well on a multiprocessor server because it has the ability to support file serving and applications across the CPUs. "Novell said it will offer that ability, but it's still behind the eight ball," she says.

Indeed, Windows NT Server users can support 500 to 600 users on a server, according to Gartner Group's Capuccio. The catch, he says, is that you'll likely have to run the NOS on a quad-processor Pentium with a ton of memory.

Software sense

Although NetWare holds the edge on the hardware side, Microsoft prevails in terms of software costs. IDC's NOS survey boiled down responses to draw comparisons for small (70-user), medium (300-user) and large (800-user) network sites. In every category, Windows NT Server showed a significant advantage in terms of the monthly cost per user for software. In fact, Windows NT Server's initial software costs were almost half that of NetWare 4.

Microsoft says Windows NT Server, in fact, is almost four times less costly than NetWare 4, when you consider that Microsoft includes features such as TCP/IP support, a remote access server, a Web server and backup software and drivers as part of its package.

Paranet's Massey says that's the chief reason a major energy client switched from NetWare to NT Server. A growing traveling population made NT Server's Remote Access Server "very appetizing to the user since it was all folded into one package," he says.

Dunsby says it's not surprising that Windows NT Server costs less. NetWare 4, he says, is priced on a per-server connection basis. In a typical NetWare installation, most users need two server connections — one for file and print services and another for access to centralized mail and other applications. In an enterprise net, that jacks up software expenditures.

One word of caution: Don't get consumed with software expenditures. In some cases, the software component of a NOS cost of ownership only accounts for 2% of all the dollars spent. "Actual software costs are so minimal compared to the rest of your infrastructure," Paranet's Massey says.

Who gets the order?

The NOS cost-of-ownership analysis is not a black-and-white process in which it is easy to declare NetWare 4 or Windows NT Server the winner. That determination will likely differ, depending on your specific network needs and environmental conditions.

The biggest cost savings comes from your ability to centralize some NOS administrative functions, says Deloitte & Touche's Dunsby.

"If the environment is not very centralized, you need relatively expensive generalists distributed through the enterprise to manage your LANs and they may not be 100% utilized," he says. NetWare 4 gets the nod here because it allows you to centralize a number of server functions, yet also distribute separate audit and security functions distributed to different workgroups.

For the same reason, if you have a fair number of workers who need to log into the network from any location, Dunsby says, Windows NT Server doesn't hold up. That environment likewise requires centralized control of the NOS along with a distributed security scheme.

In this type of large enterprise, he says, Windows NT Server becomes an expensive proposition because you must write special scripts to assign users to a local logon drive and point them to local applications. Such scripts are often complex to write and maintain, not to mention costly.

That's not to say Windows NT Server is completely out of the ballpark when it comes to cost of ownership. The NOS fares especially well at small sites.

"The low-end shops aren't so much concerned with cost-of-ownership as they are with cost of components," says Gartner Group's Capuccio. Small shops usually bring in Windows NT Server for a single department. "It's when companies try to scale this thing that they begin to look at the overall costs," he says.

National's Nitenson says Windows NT Server rises to the top as an applications server, or as a multipurpose server that can handle applications along with some level of file and print services — if that is required. "As an applications server, it's probably the best solution we could ever want, but as an enterprise server it doesn't meet our needs."

Bruno is enterprise editor for Network World. *He can be reached at cbruno@nww.com.*

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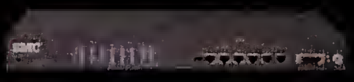

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Relief for choking token ring

Low cut-through latency gives Madge a performance edge in the lab.

By J. Scott Haugdahl

Bandwidth-starved token-ring users, take heart: Another batch of token-ring switches has hit the market since our review of Bay Networks, Inc.'s Centillion 100 (*NW,* Sept. 4, 1995, page 43). We tested three switches that deliver the low latency and high throughput you need to ease your network performance burden.

We tested Madge Networks, Inc.'s Smart Ringswitch; Nashoba Networks, Inc.'s Concord Token-Ring Switch; and 3Com Corp.'s LANplex 6000. All three enable you to set each port to operate independently at 4M or 16M bit/sec. Likewise, every one of the tested units can switch any combination of 4M or 16M bit/sec rings.

Each unit offers different levels of latency and throughput performance based on the method of switching and bridging support offered. Of the three switches, Madge has the only one with a cut-through switching design. The other two use a store-and-forward technique. In cut-through switching, packets can start moving from one port to another as soon as the switch determines the destination address. Store-and-forward switching requires full packets to be buffered before they can be switched.

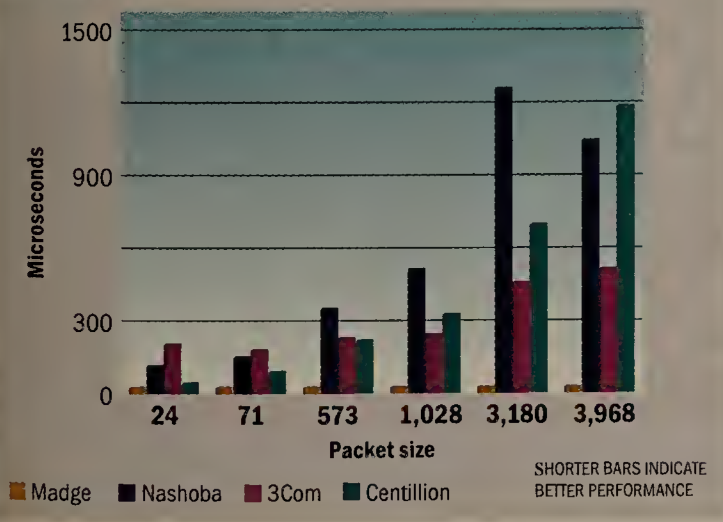
Each vendor also supports different bridging methodologies and options. There are two major bridging methodologies in use today: transparent bridging and source routing. Both operate at the Data Link Control (DLC) layer. The Madge product supports source routing only. The 3Com and Nashoba switches support both modes, but this did not result in any appreciable difference in performance throughout our tests.

Transparent bridging, made popular by Ethernet bridge vendors and the first to be standardized as IEEE 802.1d, uses the 48-bit DLC destination and source addresses to make a packet-forward or drop decision. These addresses are often referred to as the burned-in address or the media access control (MAC) address of an adapter.

In source route bridging, the decision to forward is based on ring and bridge numbers contained in the routing information field (RIF), which immediately follows the source address of a packet. A packet that has RIF information has a broadcast bit that is set to a binary 1 in the source address field.

Figure 1

INTERNAL SWITCH LATENCY



NetResults

Product	Smart Ringswitch	Concord Token-Ring Switch	LANplex 6000
Vendor	Madge Networks, Inc. (800) 876-2343 www.madge.com	Nashoba Networks, Inc. (508) 486-3200 www.nashoba.com	3Com Corp. (800) 638-3266 www.3com.com
Price as tested	$9,995 for eight ports	$12,000 for eight ports	$22,000 for four–slot chassis with one eight–port module
Pros	▲ Great performance	▲ Source route pass-through capability	▲ High capacity with up to 88 switched token rings in a 12–slot chassis
Cons	▼ Supports source route bridging only	▼ 16–port maximum	▼ Highest cost per port

The bridging mechanism a switch supports can be a key factor in the one you select. After all, a switch is merely a multiport bridge.

Madge's Smart Ringswitch

The Ringswitch is an eight-port cut-through switch with output buffering, which enables it to ensure incoming traffic will not be blocked if a destination port is busy. Each of the eight ports can be configured for unshielded twisted pair using DB-9 connectors or shielded twisted pair using RJ-45 jacks.

Madge designed its product around the most common token-ring bridging technique in place today — source routing. Although transparent bridging is a perfectly legitimate way to bridge token rings, it is not an option with the Ringswitch.

Madge Networks' *Smart Ringswitch*

The Ringswitch enables you to define a group of ports as a virtual LAN by confining broadcast traffic to be received only by those ports — a technique Madge calls Active Broadcast Control. While this method of defining a VLAN does not prevent packets from being addressed to a specific node in another LAN group, broadcast traffic is controlled within the group, and as such, users normally won't be able to see resources in the other LAN groups.

There are several ways to configure and manage the switch: Madge's proprietary TrueView Ringswitch manager, third-party management systems using Simple Network Management Protocol, telnet, modem dial-up or direct serial port. During our testing, we used the most common and direct method for all switches, namely the direct serial port connection with TTY terminal emulation.

The unit powers up as bridge No. 1 by default. Since Madge depends on source routing to forward packets, the ring number must be defined for each port before it can start. Having done that via the serial management port, we proceeded to test Madge's claim of 30-microseconds of latency.

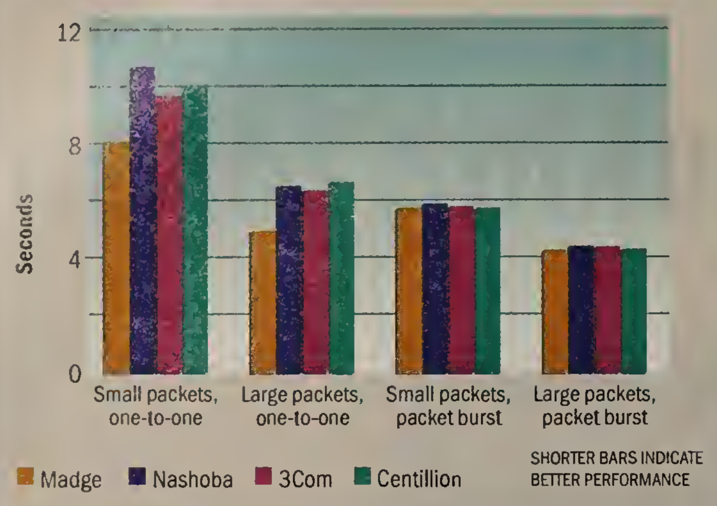
We were pleasantly surprised to see the Ringswitch meet the 30 microsecond claim almost every time (see Figure 1). We did get an occasional 40 to 70 microseconds, which may have been due to a somewhat unpredictable token acquisition time, despite our no-load, ring-to-ring test environment in which both the source and target rings had only two nodes each.

Because of the cut-through nature of the switch, we also expected the latency to be consistent regardless of packet size, which we verified to be the case. Still, our earlier test of the Centillion 100 showed its latency was lower than Madge's for smaller packet sizes.

With such a low latency, it was no surprise that the Ringswitch did very well across the board in a file transfer test (see Figure 2, page 50), with the numbers close to the results of a file transfer that involved no switch. In fact, the Ringswitch throughput was 96% that of a direct transfer in our worst case test, with virtually no perceivable difference when the file was transferred in packet burst mode in 4K-byte packets.

Figure 2

FILE TRANSFER TIMES



If we had any complaint, it would be in the area of scalability. The Ringswitch should employ a stackable architecture allowing more than eight ports to share a high-speed backplane. As it is now, to get more than eight ports, you must use a ring port to connect to another switch. Depending on your topology requirements, this connection could be a bottleneck.

It would also be nice if we had the flexibility to choose source route or transparent bridging, or both. A technique known as source route transparent (SRT) can be used to support both bridging methods. The basic algorithm is simple: If the broadcast bit of the source address in a packet is set to 1, then source route is used; otherwise, the address is learned and transparent bridging is applied.

Nashoba's Concord Token-Ring Switch

This product supports as many as 16 4M or 16M bit/sec ports via two plug-in modules. Alternatively, you can opt for an FDDI uplink instead of a second token-ring module, which gives you a total of 12 token-ring ports plus one single- or dual-attached FDDI connection.

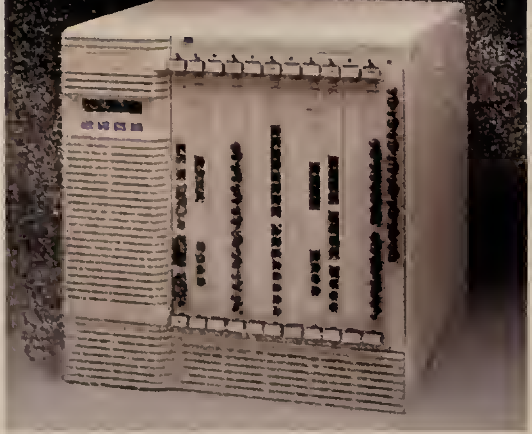
Like the Ringswitch, the Concord Token-Ring Switch is nonstackable, meaning you must use the FDDI uplink or one of the token-ring ports to expand beyond the bundled 12 or 16 ports.

ONLINE

For a comparison of cut-through and store-and-forward architectures in switches, link to Network World Fusion. Select NetRef, Buyer's Guides and Reviews, then Token-Ring Switches.

http://www.nwfusion.com

The Concord Token-Ring Switch has the flexibility of operating in transparently bridged or source-routed mode. An interesting variation allows source-routed packets to be bridged transparently using a technique that permits packets to pass through the bridging part of the switch only if they have RIF information. However, the switch still bases its store-and-forward decision on the DLC destination address, just like transparent bridging.



3Com's *LANplex 6000*

Furthermore, no bridge or ring number information is added to explorer packets as they pass through the bridging part of the switch. This allows an existing ring to be broken up into multiple segments and thus allows an existing ring number to be preserved across all of the segments.

This clever mode of operation allows a manager to microsegment an existing source-routed ring without having to worry about assigning and managing new ring numbers.

Nashoba calls this Single Ring Mode, in which each physical port is part of the same logical ring group as defined by a single segment number. There can be multiple ring groups defined. The more traditional ring number per-port setup is also supported, which is referred to as Multi-Ring Mode.

If you're concerned about power feeds, the Concord Token-Ring Switch is available with a second power supply.

The Concord Token-Ring Switch's latency bested 3Com's LANplex 6000 for smaller packet sizes, but didn't do as well with the other packet sizes as either 3Com's or Madge's switches. Likewise, the Concord Token-Ring Switch's throughput was lower than the Ringswitch's, primarily because of its use of store-and-forward technology.

The overall drawback of store-and-forward switches is evident in our worst case tests — file transfer without the benefit of packet burst. As the results indicate, the switch pays a 24% to 38% performance penalty.

However, the situation changes dramatically with the packet burst function implemented. Now the store-and-forward switches exhibit only a 1% to 4% penalty using the larger 4K-byte packet size and 2% to 5% using the smaller 1K-byte packets. This demonstrates how sending packets back-to-back in burst mode minimizes the latency effects in a store-and-forward switching architecture.

3Com's LANplex 6000

The LANplex 6000 is a chassis-based modular switching system that allows a mixture of 10M bit/sec Ethernet, FDDI and token-ring modules to be plugged into a single chassis. In any given configuration, one chassis slot is taken up by a LANplex management module.

HOW WE DID IT

To measure performance, we conducted latency and throughput tests on each switch.

To test for latency, we measured the interval between when the first bit of a packet was received on one port and the time the first bit was transmitted to a second port. We used dual Wandel & Goltermann, Inc. Domino protocol analyzers attached to two token rings separated by a switch port. We synchronized the time clocks in each unit to compare times side-by-side in a Windows environment. Because a time was stamped at the end of each captured packet, the latency was measured by subtracting the time stamp of the forwarded packet from that of the original and then subtracting the time the forwarded packet was on the receiving 16M bit/sec token ring, which was half a microsecond per byte. This left us with a small contention time – the time needed to acquire the token on the forwarding ring – plus the time that the packet was switched internally. By using only two nodes on each of our two test token rings, we minimized the effect of token acquisition time in the tests, leaving us with the switch latency time.

To measure latency for a wide range of applications, we used packet sizes ranging from 24 to 3,968 bytes – including the four-byte cyclic redundancy check. These packet sizes are commonly encountered in token-ring environments and are consistent with our previous token-ring switch test.

In our throughput test, we transferred a 2M-byte file between a workstation and server connected via a switch, and also without the aid of a switch, which enabled us to measure how much delay the switch added. We sent the file four ways:

- Small 1K-byte packets with a one-for-one request-to-reply ratio, often referred to as a ping-pong protocol.
- Large 4K-byte packets with a one-for-one request-to-reply ratio.
- Packet burst mode with a one request-to-many reply packets ratio using small 1K-byte packets.
- Packet burst mode with a one request-to-many reply packets ratio using large 4K-byte packets.

The first two settings simulate a lightly loaded network, whereas the last two simulate a more heavily utilized network in which multiple packets are received nearly back-to-back.

We tested the LANplex 6004 — the four-slot version — with one management module and two token-ring switching modules installed for a total of 16 available switched ports. We could have installed one more token-ring module for a total of 24 switched ports. For more modules, a 12-slot chassis — the LANplex 6012 with dual power supplies — is available.

The architecture of the LANplex 6000 is unique in that FDDI is used internally to interconnect the various plug-in modules. The token-ring switching module has eight token-ring ports with RJ-45 connectors, and one FDDI backplane interface, which may be connected to any of three LANplex chassis FDDI backplanes.

Nashoba Networks' *Concord Token-Ring Switch*

The token-ring switching module can operate in one of three modes: transparent, source route or SRT. We didn't notice any appreciable performance differences in using one mode over the others. In transparent mode, the bridge conforms to the 802.1d Spanning Tree Protocol and can accommodate as many as 8,192 addresses.

Like the Ringswitch and Concord Token-Ring Switch, the LANplex 6000 is manageable via a direct serial connection, SNMP and telnet.

The LANplex did well in our latency tests for medium to large packet sizes, but it was behind the Concord Token-Ring Switch in small packet sizes. It suffered the same type of throughput penalties as the Concord Token-Ring Switch.

The upshot

The Ringswitch was the clear speed demon in all of our tests. Keep in mind, however, that in heavily loaded networks, a cut-through switch has to buffer packets to keep from dropping them and consequently can exhibit performance closer to that of a store-and-forward switch.

But if maximum performance with both light and heavy traffic is your goal, and you don't mind microsegmenting with source routing, then the Ringswitch is worth a closer look. For integration with FDDI, the Concord Token-Ring Switch or the LANplex can do the job. Madge has announced an FDDI option, but it was not available in time for our tests.

For situations that require more than 16 switched token-ring ports, the LANplex chassis or even Bay's Centillion 100 are worth looking at. The Centillion is also available with an external 155M bit/sec ATM interface used to interconnect two or more Centillion 100 switches.

The alliance is a co-operative of users, consultants, educators and integrators that applies its technical and business skills to analyze and compare strategic network products. A list of alliance partners can be found on page 41.

Haugdahl is an executive consultant for Pine Mountain Group, a company specializing in network training, troubleshooting and optimization. He can be reached at scott@pmg.com.

Management Strategies

Covering: Career Insights and Innovations
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Briefs

■ *The* **Computer Security Institute (CSI)** *is offering a series of* **information security classes** *from September through December.*

The two-day classes cost $695 and will be held in Chicago; Gaithersburg, Md.; New York; Toronto; San Francisco; and Washington, D.C. The series includes:

- *Introduction to Communications Security*
- *How to Secure Internet Access: Web of Opportunity*
- *Network Security: LANs, Client/Server and the Internet*
- *The New Risk Analysis: A Facilitated Approach*
- *Disaster Recovery Planning for Information Systems*
- *Introduction to Computer Security*
- *LAN Security*
- *How to Build an Information Security Awareness Program*
- *How to Develop Computer Security Policies and Procedures*

CSI: (415) 905-2626.

Oracle gets into multivendor training market

By Jim Brown

Oracle Corp. is expanding its educational offerings to include everything from training IT staff in multivendor technologies to providing educational tools that can be used to prepare primary and secondary school teaching aids.

The database company recently spun off its education division into a separate business unit, one that is positioned to offer a one-stop shop of educational services and products.

Oracle will continue to provide training for its own products, but has also made deals with Hewlett-Packard Co. and Sun Microsystems, Inc. to train users on those companies' products.

For instance, a user will receive training for an Oracle database running on an HP or Sun workstation from an Oracle instructor. HP or Sun educators will then be called in to provide training for the hardware and operating systems. Oracle Education, as the new business unit is called, will seek to create similar deals with other companies.

In addition to information technology, Oracle Education will offer training in various desktop applications.

It will also make available some of the tools and methodologies used to produce its own courseware to other educational firms, even to publishers that supply textbooks to primary and secondary schools.

A linchpin service for the new unit is its Organizational Change Management offering. Under the service, Oracle Education will assess a customer's overall training needs, inventory employees' current skill sets, identify gaps between those skill sets and the new ones being required, and then develop an overall training program.

Eventually, Oracle Education will branch out to offer interactive education on the Internet and help customers establish courses that can be offered on intranets. ■

WHAT'S IN ORACLE'S SCHOOLBOOK

- **Instructor-led training:** A team of 681 instructors teach more than 170 courses that run from one to five days in 240 centers in 61 countries.
- **The Oracle channel:** This is a one-way video and two-way audio broadcast satellite network with more than 500 sites worldwide. Students use handheld keypads to respond to instructor questions or to request a turn to speak.
- **Technical seminars:** Held in various locations for one-half to a full day, these seminars focus on highly specific topics, particularly ones that cover new Oracle products or technology.
- **Computer-based training:** Oracle has a catalog with more than 50 titles published in six languages.
- **Other training tools:** The company also sells video-based training products and self-paced workbooks.

Academia-trained CNEs and CNAs land jobs

Novell, Inc. says its efforts to spread Certified Novell Engineer (CNE) and Certified Novell Administrator (CNA) training into more than 150 postsecondary and even high schools is paying dividends.

According to the company, a number of recent graduates who obtained their CNE or CNA while in school have found jobs. Here are some examples:

■ Seven students who graduated recently with the first Novell certifications from the Milwaukee School of Engineering, a four-year university offering both undergraduate and graduate degrees in areas that include business, communications, engineering and nursing, have secured postions paying between $35,000 and $40,000 per year.

■ The first high school student in Utah to earn Novell certification has landed a summer job testing software.

■ A group of recent high school graduates armed with Novell certification in Virginia Beach, Va., have started their own network consulting firm.

Novell brings its CNE and CNA curriculum into the schools under two partnership programs developed for the service and support of computer networks. The Novell Education Academic Partner (NEAP) program begun in 1992, brings vendor training to postsecondary schools. Its counterpart, the NEAP-Secondary program, begun this year, is part of a nationwide "school-to-work" program in which vendors help high school students obtain vocational job skills.

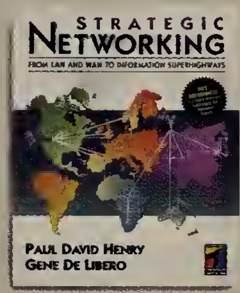
— Kathy Scott

NETWORK BOOK REPORT

Strategic Networking

Paul David Henry, Gene De Libero (Boston: International Thomson Computer Press), 498 pp., $34.95. Phone: (800) 842-3636; ISBN: 1-85032-203-1.

The authors help unlock the complexity of networking by outlining the key concepts, technologies and product suppliers. They then offer suggestions for strategic decision-making. Managers who plan and develop networks, plus those who train junior staff, can use this book to learn or reinforce their knowledge of networking basics, in addition to the larger issues of connectivity, interoperability and security.



Emerging technologies, protocols and standards are also discussed. Readers are given guidelines for network upgrades, disaster recovery and application development for LAN, WAN and Internet systems, including client/server networks. At the end of each chapter, the authors provide listings of print and online resources that you can tap for more detailed information.

Reengineering IBM Networks

Anura Gurugé (New York: Wiley Computer Publishing), 582 pp., $39.95. Phone: (212) 850-6336; ISBN: 0-471-14274-3.

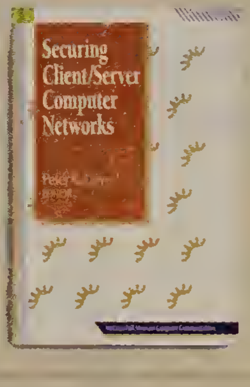
This book is a must-read for users looking to transform a traditional SNA network to an SNA/Advanced Peer-to-Peer Networking-based one that is capable of handling multimedia and multiple protocols.

Gurugé has written a systematic guide for the process of SNA-to-APPN reengineering, covering the most important aspects such as transparent bridging to Asynchronous Transfer Mode, token-ring switching to High Performance Routing links, and Data Link Switching to AnyNet Gateway connections. Each chapter begins with a quick content summary. A glossary and list of acronyms help readers with unfamiliar terms. You reap the most benefit from this book if you are familiar with SNA/APPN traffic, IBM-supplied ATM campus switches and TCP/IP.

Securing Client/Server Computer Networks

Peter T. Davis, Editor (New York: McGraw-Hill), 589 pp., $50. Phone: (800) 262-4729; ISBN: 0-07-015841-X.

This book covers security in a variety of environments, including Unix, NetWare and Windows NT. Planners, developers, administrators and users working at any level of client/server computing can learn about security exposures with distributed databases, systems availability and performance, and application development and conversion issues.



An overview of client/server, standards, applications and security concepts is presented first. Then strategies for securing application development tools, the client, middleware and server environments are suggested.

To find out more about these books, follow the links on Network World Fusion to the respective publishers' Web sites. http://www.nwfusion.com From the main menu, select Careers then Network Book Report.

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Please send a resume, referencing the department code, to Human Resources, Bay Networks, Inc., 8 Federal Street, Billerica, MA 01821; Fax (508) 436-3510; EMail: baynetworks@isearch.com (send text only). Please check out our web site for a complete list of openings: http://www.baynetworks.com/corporate/employment/ We are proud to be an equal opportunity employer.

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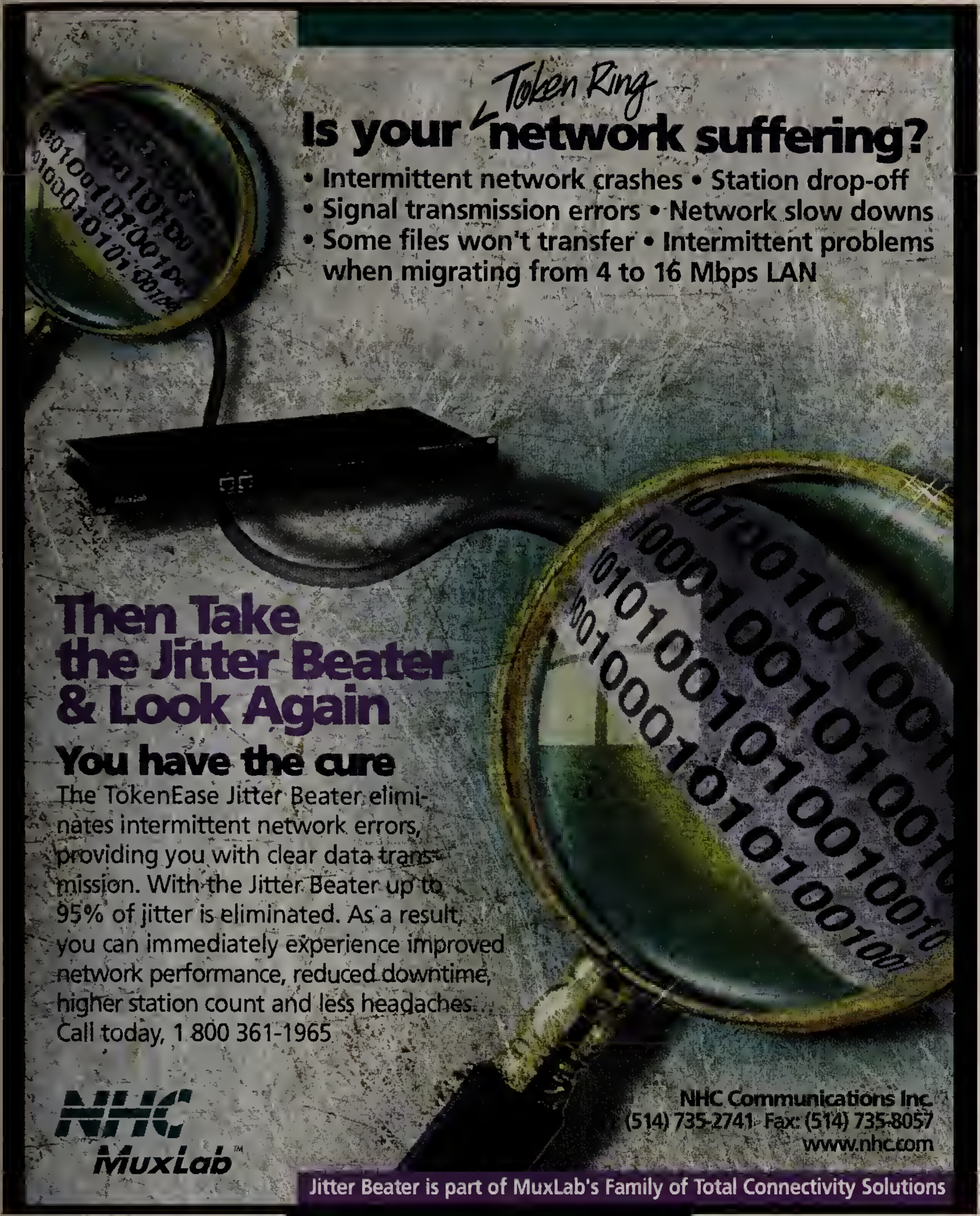

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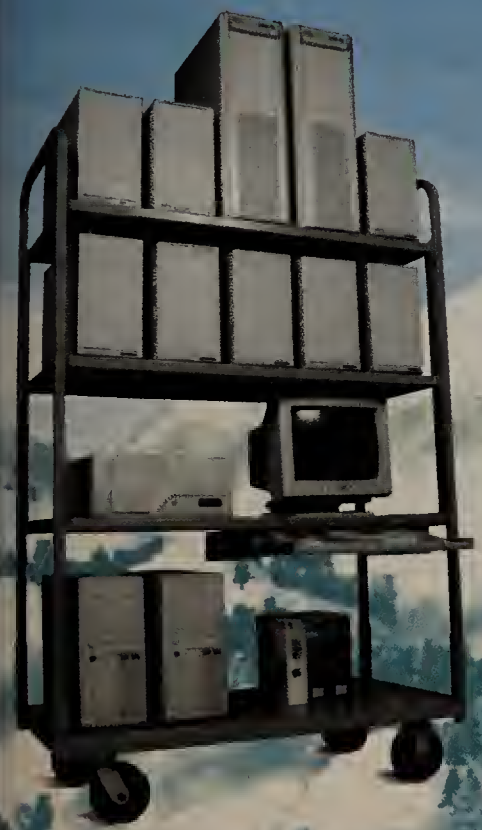

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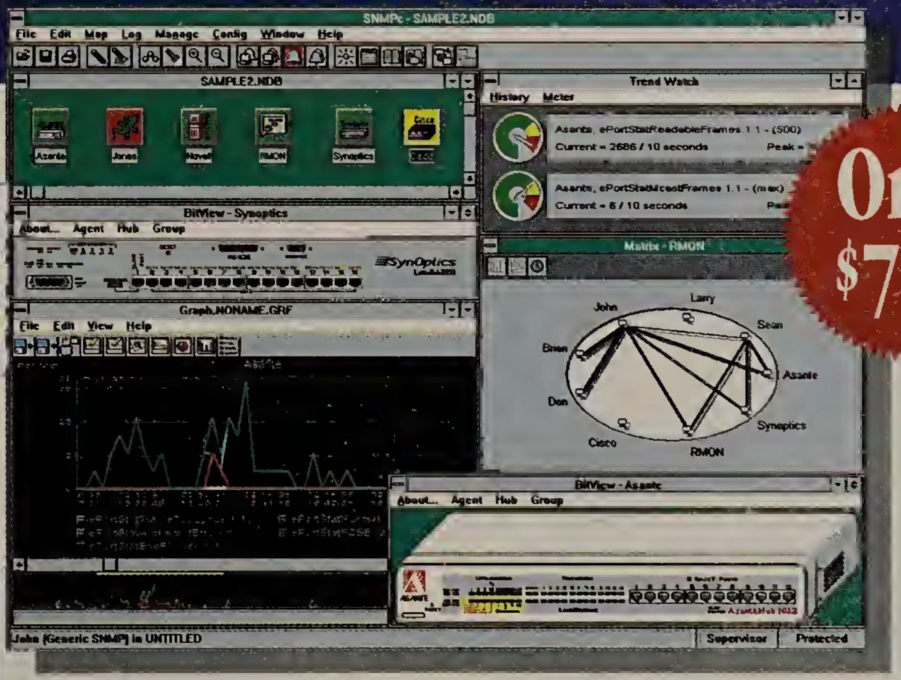

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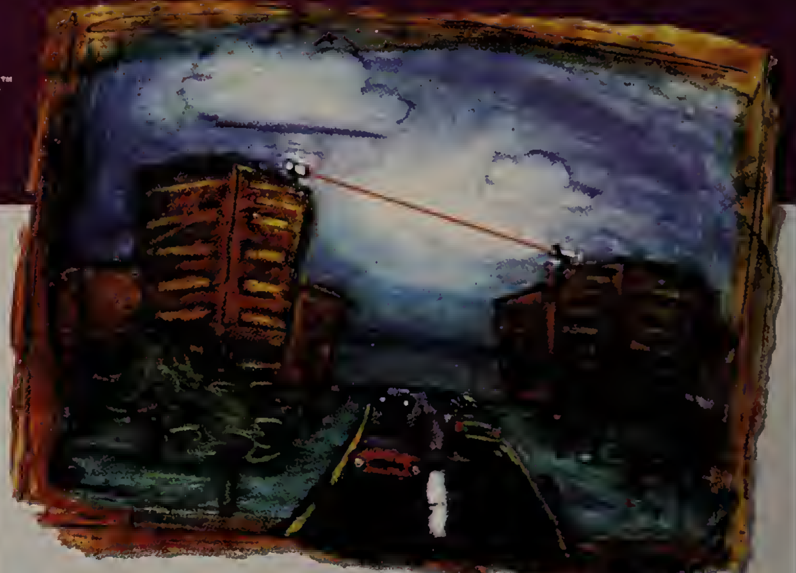

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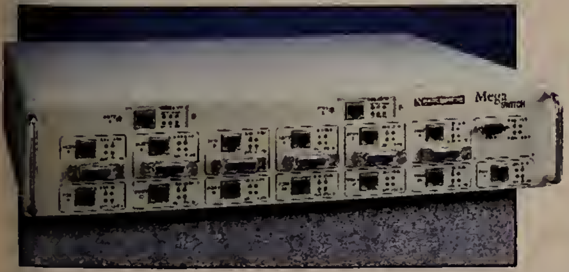

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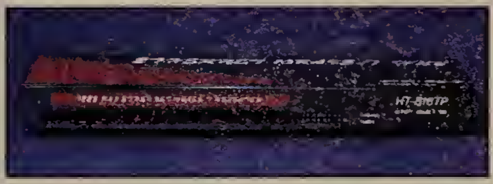

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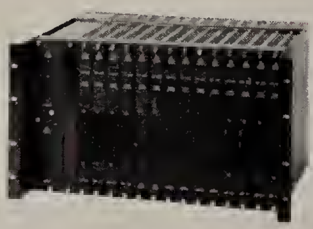

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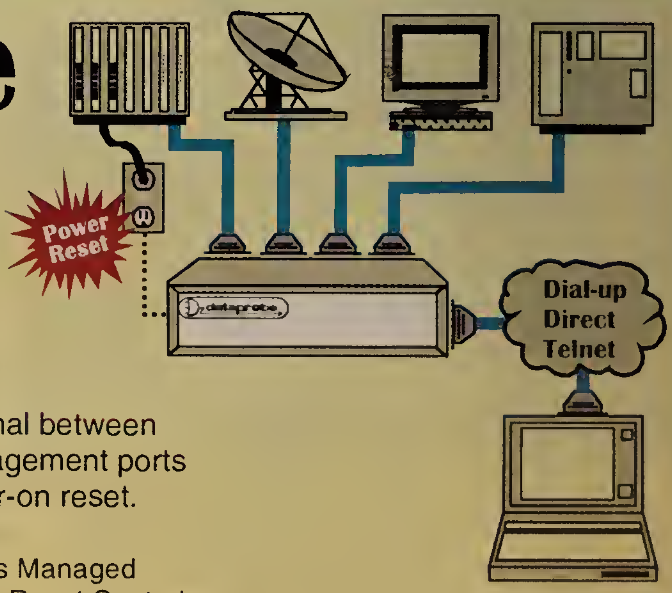

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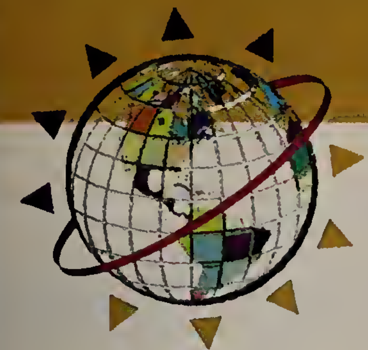

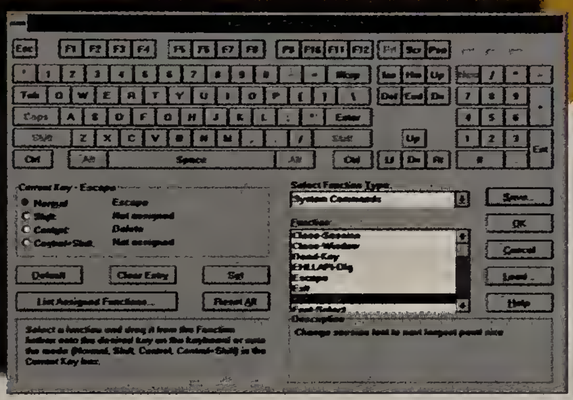

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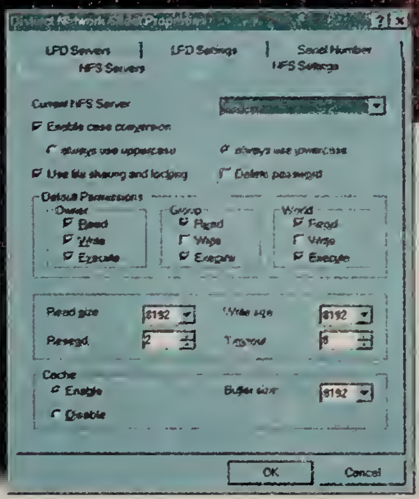

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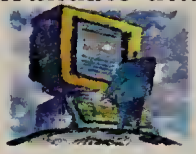

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Bell Atlantic Announcement Pay Telephone Services

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- NETWORK CONTROLLED NON-COIN LINE
- NETWORK CONTROLLED COIN LINE

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The loop-start parameters needed to permit terminal equipment to operate in a manner compatible with NCIL service can be found in the following publication from the American National Standards Institute:

> ANSI T1.401-1993, *American National Standard for Telecommunications - Interface Between Carriers and Customer Installations - Analog Voicegrade Switched Access Lines using Loop-Start and Ground-Start Signaling.*

Network Controlled Non-coin Line (NCNL) Service

The loop-start parameters needed to permit terminal equipment to operate in a manner compatible with NCNL service can be found in the following publications from the American National Standards Institute:

> ANSI T1. 401-1993, *American National Standard for Telecommunications - Interface Between Carriers and Customer Installations - Analog Voicegrade Switched Access Lines using Loop-Start and Ground-Start Signaling.*
>
> ANSI T.1 401.01-1994, *American National Standard for Telecommunications - Interface Between Carriers and Customer Installations - Analog Voicegrade Switched Access Lines using Loop-Start Signaling With Line-Side Answer Supervision.*

The requirements in ANSI T1.401.01-1994 are applicable when the optional Line-Side Answer Supervision feature is provided.

Network Controlled Coin Line (NCCL) Service

The standard coin line parameters needed to permit terminal equipment to operate in a manner compatible with NCCL service can be found in the following publications from Bellcore:

GR-528-CORE, *Public Telecommunications Service;*
TR-TSY-00456 (Section 4), *Public Terminal Generic Requirement;*
TR-NWT-000506 (Section 6.2, *Customer Line Signaling), Signaling Section 6.*

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Rate hike

Continued from page 1

week hope to score a big victory by getting the Federal Communications Commission to make it cheaper and easier for them to enter local markets to compete with regional Bell operating companies.

The FCC is expected to set mandatory terms for RBOCs to interconnect their local networks with new local carriers, and AT&T in particular has stepped up its public lambasting of RBOCs for overpricing services and stifling competition.

AT&T started the pricing trend earlier this month when it raised prices roughly 4% on the most popular inbound and outbound services used by large customers — such as Software Defined Network and Megacom 800 — as well as services for smaller businesses and resellers. Then, last Monday, MCI followed with a similar increase, though it focused almost exclusively on large business services (see graphic, page 1).

"For AT&T and MCI to carp about local telephone company earnings while they raise long-distance prices is the height of hypocrisy," charged John Schneidawind, a top Washington spokesman for BellSouth Corp.

The FCC's deliberations have provoked a tornado of lobbying activity. AT&T in particular is demanding the FCC force the RBOCs to interconnect their nets at nearly a dozen key points and drop allegedly inflated costs from wholesale rates.

Irritated users said the long-distance carriers appear to be trying to earn as much money as possible before the RBOCs start filing to enter the long-distance business — a process likely to begin shortly after the interconnection decision.

"I think they're going to get as much out of us as possible before competition really hits and they have to lower their rates," said Matthew O'Brien, president of the Communications Managers Association.

Competition is apparently expensive. The continuing emergence of long-distance carriers is adding to the carriers' expenses for advertising, salespeople and other items, argued AT&T spokesman Gary Morgenstern.

The AT&T and MCI moves were revealed in tariff filings with the FCC's Competitive Pricing Division. Both filings were made on three- or four-days' notice and apparently not reviewed by FCC staff.

"The commission and the Justice Department are oblivious to what's going on with these price increases that are going on in lockstep," fumed Robert Blau, BellSouth's vice president for regulatory affairs.

Piling it on

The latest price hikes are in addition to a round of increases that occurred earlier this year after Congress passed the telecommunications reform act (*NW*, May 6, page 1). In general, they add close to a penny per minute to services such as AT&T's SDN, where basic rates for a 500-mile call between two company offices have most recently increased from 14.2 to 14.8 cents per minute, and calls to off-network locations have been boosted from 20.3 to 21.1 cents per minute. Likewise, MCI's Vnet on-network rates went from 14.1 to 14.7 cents, with on-net to off-net rates going from 20.1 to 20.9 cents.

The new AT&T and MCI price hikes do not include changes in residential rates and do not involve private-line and frame relay prices. In fact, MCI recently lowered its rates for typical frame relay designs (*NW*, July 15, page 14). But increasing rates on popular outbound and 800 services creates a ripple effect for most large companies, O'Brien said.

"Now you're going to have to go back and redo your budget," he said. "Either you have to cancel some projects or move money from elsewhere."

Although large users enjoy deep discounts on AT&T and MCI rates, the carriers' rate increases usually flow through to most of them due to the terms of their contracts, O'Brien said.

"Here they are yelling and screaming that they're paying too much to the local carriers, yet they're screwing the user," O'Brien said. "If this was true competition, they would jump all over the competition saying, 'Hey, he's raising his rates, I'm lowering mine.' "■

RBOCs: long-distance salvation

Telecommunications users are overcharged $5 billion to $25 billion every year for long distance, despite vast advertising wars and promotions of "deals" for large customers.

That is the conclusion of a new study from the American Enterprise Institute, conducted by Yale University economist Paul MacAvoy. The three big long-distance carriers have "tacitly colluded" by repeatedly setting prices that follow AT&T's tariff filings rather than the declining cost of carrying voice-grade traffic, said MacAvoy, a former economic adviser to Presidents Ford and Bush.

The key to AT&T's, MCI Communications Corp.'s and Sprint Corp.'s ability to set prices is their enormous networks: They dwarf those of any other long-distance carrier, MacAvoy said.

"Each of the nationwide facilities-based carriers — AT&T, MCI and Sprint — currently has enough fiber capacity to carry all of the nation's long-distance traffic," MacAvoy said. And growth in fiber-optic capacity, combined with Synchronous Optical Network (SONET) installations and wave division multiplexing, means that the average cost of carrying traffic has dramatically declined. Instead, the carriers have essentially agreed to hold market shares steady so their profit margins increase, MacAvoy claimed, though that may come as a surprise to some corporate users heavily fought over by the carriers.

The only other carriers that could step up to the plate with their own networks and force prices down are the regional Bell operating companies, MacAvoy said.

—David Rohde

Netscape

Continued from page 1

mon Object Request Broker Architecture (CORBA).

That comes on the heels of Microsoft's announcement last Friday that it would serve up its counter-approach — Common Object Model/Distributed COM — as a public standard either through X/Open, the OMG, the Internet Engineering Task Force or a new group. COM and DCOM serve as the underlying object models for Microsoft's ActiveX technology.

Using either vendor's distributed approach, developers can pull together multiple objects on a single Web page.

For instance, a virtual reality tour of Europe on a travel Web site could be linked with an audio presentation on a different machine.

ActiveX in motion

Microsoft plans to meet with customers and stakeholders to discuss the best way to put its ActiveX technologies, for creating reusable Internet/intranet software components, into the standards environment.

"Microsoft is taking the proprietary tag out of ActiveX," said Ira Machefsky, senior analyst with Giga Information Group in Santa Clara, Calif.

"One of Netscape's main competitive points with CORBA was that it was open; Microsoft is closed. So Microsoft's going to say, we're as open as CORBA is," he added.

Dubbing its plan the Open Network Environment, Netscape has packaged its latest version of JavaScript (featuring LiveConnect code for tying together Java applets, plug-ins and HTML elements), new foundation class libraries (application building blocks) and support for the recently devised Internet Inter-ORB Protocol (IIOP), which is part of CORBA. The package is designed to rival offerings from Microsoft in the corporate development arena.

Netscape said it will integrate Java-based object request brokers into its client and server software, and through CORBA, objects can be linked on different machines in an intranet or over the Internet. IIOP facilitates interoperability between the CORBA objects.

ActiveX performs a similar function. It allows objects to communicate in a distributed environment, and in fact, there are now ActiveX components working over the Internet. But, currently, COM-based ActiveX objects cannot run on different machines without specific network-aware code.

Microsoft, apparently, will beat Netscape to the punch. Netscape isn't expected to have its IIOP-compliant ORB in its Navigator client software until the end of the year, when the browser code-named Galileo hits the streets.

The IIOP-compliant SuiteSpot server software, code-named Orion, isn't due out until early 1997.

Microsoft, on the other hand, said it plans to have distributed ActiveX out next month.

"In a few weeks, all existing ActiveX objects will be able to transparently communicate with other objects over any network without any modification to those objects," said Charles Fitzgerald, program manager in Microsoft's Internet platform and tools division."

Also, Microsoft this week will try to steal away one of Netscape's big marketing points: cross-platform support.

At an Internet Explorer Reviewers Workshop, Microsoft will talk up plans to port its IE 3.0 browser, replete with ActiveX support, to the Unix platform.

According to Fitzgerald, the company is working with a trio of third-party vendors — Bristol, Mainsoft and Software AG — to put DCOM onto the Unix platform.

The Unix version is due for shipment by the end of the year.

"Microsoft's greatest weakness is that they're perceived as the Windows-only company," said Rob Enderle, an analyst with Giga Information Group.■

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Dumb and Dumber — Microsoft asserts itself and almost shoots itself in the foot

I was aghast. Microsoft had apparently lost its collective mind completely (note the intended aggregation).

What had those jolly jokers in Redmond done? Well, my friend, they had taken a good thing, specifically Windows NT Workstation, and hobbled it.

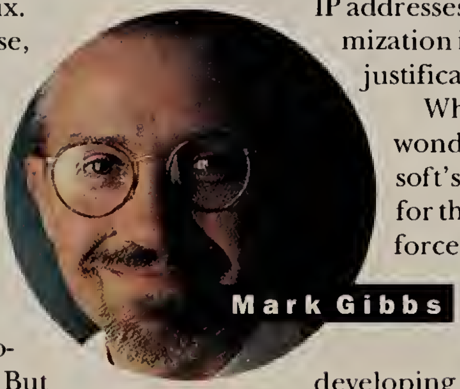
Yep, you read that right. And yep, as you have probably guessed, it was simply a pathetic ploy to make users pay more.

Microsoft had decided in the 4.0 release of Windows NT Workstation to limit to 10 the number of incoming IP connections that could be supported in any 10-minute period.

Was there a technical reason for this? Nope. Was there a functional reason for this? Nope again.

Was there a marketing reason? You bet there was.

You see, Windows NT has been emerging as the successor to Unix. NT is generally easier to use, better documented in many ways, and there's tons of applications and add-on software for it. So, it isn't surprising that many organizations have taken to it.


Mark Gibbs

Now, if you're going to put up a Web server, Microsoft's NT is a good choice. But NT comes in two flavors — Workstation and Advanced Server — and you can run a Web server on either. For many organizations, the fact that Workstation costs only $290 while Advanced Server costs $999 has made the choice of versions very easy.

The consequences of using NT Workstation as a Web server platform are, er, umm . . . well, none. It works. Indeed, the nature of Web server software is that you can service thousands of users per day and throughput is usually limited by the bandwidth of the Web server's connection to the Internet.

But with the new 4.0 release of NT Workstation, the most traffic you would be able to support, regardless of bandwidth, would be that generated by a maximum of 1,440 users over an entire 24-hour period. Sounds like a lot until you consider that the limitation is actually 10 users in any 10-minute period.

Of course, this limitation was to apply to all TCP/IP socket connections, so using services such as file transfer, domain name servers and teleconferencing would be very limited.

> *Windows NT has been emerging as the successor to Unix because it is easier to use.*

Microsoft was also going to limit user connections to the file and print services on an NT Workstation to a maximum of ten. Part of Microsoft's justification for the change was to allow optimization and to reduce NT Workstation's memory requirements. According to Microsoft's Rich Tong, NT Workstation "is not optimized to be a server." Yeah, so?

I might have believed the rationale for shared file and print services, but that argument has nothing to do with the 10 IP addresses in 10 minutes. Optimization is at best an ingenuous justification.

When the news broke, I wondered if this was Microsoft's attempt to make up for the fact that it had been forced into doing business Internet-style. Just think, Microsoft has poured millions into developing its browser, Internet Explorer, and server, the Internet Information Server, and had to give them away free to play catch up with Netscape. That was certainly strategic thinking, as it seriously dented Netscape's positioning — exactly what Microsoft needed to begin to take ownership of the market.

But this new move made it look like we were finally seeing the iron fist in the velvet glove, the Microsoft we have come to know. (The old PC joke was that Intel giveth and Microsoft taketh away.)

Alas, Microsoft woke up at the 11th hour and redeemed itself. Soon after word got out that Microsoft was going to impose this artificial restriction on IP sessions, the company reversed its position and overcame what it called the "technical" restriction.

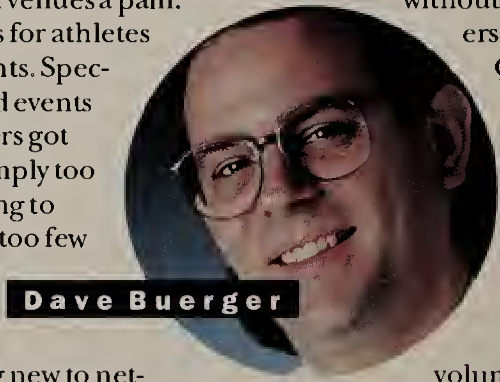
But before we get too excited, let's wait to see what the licensing terms look like.

Let Gibbs know what you think of this lame attempt by the Redmond Rogues at mgibbs@gibbs.com or call him at (800) 622-1108, Ext. 504. Oh, how do you like Intranet Magazine*? Suggestions?*

Erasing gridlock will keep users off your aching back

Olympic contenders have discovered it takes more to win a medal than athletic prowess. The biggest challenge of the Summer Games is getting through Atlanta's gridlocked transportation network.

A few weeks ago, I wrote about dodging widespread construction. Now it is the mass of spectators that makes moving between Olympic venues a pain. Late shuttle buses for athletes have delayed events. Spectators have missed events because bus drivers got lost. There are simply too many people trying to squeeze through too few streets at the same time.


Dave Buerger

Gridlock, of course, is nothing new to network managers struggling to improve the performance of client/server applications in network environments.

Bottlenecks rarely crop up on high-speed LANs. Slow servers and internetwork gear are occasionally culprits. But the primary drag on application performance is inefficient data transmission techniques over wide-area dial-up links, particularly when the server in question is a Web server.

> *The primary drag on application performance is inefficient data transmission techniques over wide-area dial-up links.*

Ordinary Web servers have built-in performance limitations. First is their one-way nature. Most users are not aware that information on Web servers is doled out in static pages and only upon request. What seems to be a permanent server link is really a stateless connection. Users must reestablish a link for each requested page. This can result in frustrating response time and interruptions of service.

Wayfarer Communications, Inc. is offering a way to sidestep these problems. Its Web server, called QuickServer, acts as a two-way message router. Software agents are used to broker information requests between the server and data sources. Its two-way server-push design uses asynchronous, bidirectional messaging to reduce network traffic created by conventional server/browser applications.

Two sample applications on Wayfarer's home page (www.wayfarer.com) include StockWatcher and MedalWatcher.

StockWatcher is a real-time stock price monitor. Stock price changes are automatically pushed to your screen without request. Network managers will be pleased to know QuickServer transmits only the data changes, not the complete page. According to Wayfarer, this equates to just 184 bytes per quote instead of 4,713 bytes per quote from a service such as Quote.com.

Cutting data transmission volume can significantly reduce cumulative communications costs, especially when thousands of users seek information.

MedalWatcher is a real-time Olympic score monitor, which automatically updates the number of medals won by countries participating in the Games. Users can personalize the results they choose to receive. They can also participate in online polls and a trivia game, instantly and automatically receiving results. You can't get interactivity like this with regular static Web-page servers.

Boston-based Acumen Financial, Inc. is using QuickServer to develop an interactive application for its retirement plan customers. People can use browsers to enroll in plans, check 401K options, access account information, run what-if investment scenarios, redirect contributions to different funds and even manage lump-sum distributions.

QuickServer handles security and user authentication for such applications with RSA Data Security, Inc.'s RS-4 encryption. Wayfarer says applications can be quickly developed with standard tools such as Visual Basic and PowerBuilder. Applications can stand alone or plug in to a browser. You can download a free 30-day trial of Wayfarer's software developer's kit from its home page.

No one likes gridlock. Using tools like QuickServer is a good way to help keep network applications moving fast.

Buerger is a networking industry consultant and writer in Atlanta. He can be reached at dave@buerger.com.

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